CLAY WORKING MACHINES

H. BREWER & Co. TECUMSEH
MICHIGAN, U.S.A.

CATALOG No. 48

Digitized by:

INTERNATIONAL

ASSOCIATION
FOR
PRESERVATION TECHNOLOGY,
INTERNATIONAL
www.apti.org

BUILDING
TECHNOLOGY
HERITAGE
LIBRARY

https://archive.org/details/buildingtechnologyheritagelibrary

From the collection of:

NATIONAL
BUILDING
ARTS
CENTER

http://web.nationalbuildingarts.org

Established 1849
Incorporated 1900

Clay Working Machines

Catalog
Number
Forty
Eight

H. BREWER & COMPANY

TECUMSEH, MICHIGAN, U. S. A.

45.00

Introductory

As manufacturers of Clay Working Machines we feel that we need no introduction to the trade, for since 1849 we have been uninterruptedly engaged in that business; quite recently, however, our line has been so greatly enlarged and improved that some of those who know us best are not informed as to the scope of our present operations. With years of experience to guide us we have practically re-designed our entire line, incorporating weight and strength to a degree which a few years ago would have been considered unnecessary. We have done this after careful observation of conditions, close study of present requirements and a full knowledge of what is expected of clay working machinery in general, and our results have been most gratifying both to ourselves and to those who are using the machines we build.

The purpose of a catalog is to supply information, to give details and to furnish data which will assist an interested person in arriving at a definite understanding as to what a certain machine or collection of machines really is, how they are built, what they will do, and why they are or are not adapted to his particular circumstances; and believing fully in this, our catalog descriptions are sometimes given at considerable length. We are convinced, however, that the prospective buyer is better satisfied with reasons why a machine is good than he is with the old simple time-worn expression "the best" without any facts to substantiate it; and therefore despite the possibility of making our catalog disinteresting to the casual reader, we endeavor to make it useful to the person who carries the responsibility of making a satisfactory and profitable selection.

There are many who have, during our fifty years engagement in this business, given us loyal support and assistance and to them we now desire to express our sincere gratitude, feeling that we owe to them much of the credit for our success and advancement. We will endeavor to merit their co-operation in the future and will continue unswervingly in the policy of fair treatment to all; good, well built machines and prices as low as possible consistent with good design and construction.

Guarantee

WE guarantee everything we produce to be of first-class material and workmanship; to be just as represented in every particular, and capable of making from suitable clay the full amount of ware specified in this catalog when given good mechanical attendance. We will replace without charge, f. o. b. cars our factory, any parts proving defective, and will make without charge such changes in die or auger arrangement as may be necessary to suit the peculiarity of the clay being worked.

In all cases where we are able to satisfy ourselves that the clay to be used is suitable we are willing to furnish such machinery as any responsible person or concern may desire under guarantee of satisfaction or no sale, with the understanding that the purchaser will pay freight upon arrival of the shipment, set up and start the machinery at once, and either accept or reject it within a period of time previously specified; also, that in case the machinery should prove unsatisfactory, the purchaser will load same on cars or properly store it for a reasonable time, subject to our order, without expense to us.

Repairs

IT is to be regretted that it is impossible to build machines which in some of their parts will not wear out, but such is the case. We exercise every precaution in the selection of our materials, and endeavor to build our machines as nearly proof against wear as possible, but continued use will destroy some parts and accidents will happen. We therefore intend to carry in stock duplicate parts from all our patterns ready for immediate shipment, and it is rarely the case that the slightest delay is experienced. Each part of every machine is assigned a number, and orders which specify that number are easily taken care of, but if it is impossible to determine the number a concise description of the part required will generally answer. If the machine you are operating was not purchased direct from us it is always desirable to state from whom you procured it and the name of the original purchaser. This information will assist us in locating your machine upon our records, and facilitate dispatch in filling orders.

Brewer Horizontal Brick Machines

If one machine is better than another there are reasons for it, and those reasons ought to be easily recited. There are some rather strong claims for superiority in these paragraphs, but every one of them is backed up with a good substantial explanation.

THERE are only three questions of importance which require settlement before making selection of a brick machine. They are: How is it built? What is the capacity? What is the price? If the design and construction are not along the most modern lines the price and capacity are not worth the getting, but when those items become factors in the case, the price of any machine can be readily and accurately obtained by asking for it; and the capacity can be determined by the guarantee of the manufacturer, taking into consideration, of course, the reliability of the guarantee. To fully comprehend the question of how the machine is built is a different matter, careful study and comparison being necessary before a credible opinion can be established. Therefore, in the paragraphs which follow special attention is given to bringing out points pertaining to design and construction without leading the brick machine user farther than he is capable of going with a good, clear understanding into the field of the brick machine builder. There are no extravagant statements, although some claims are made with considerable emphasis, and there is nothing withheld because there is no satisfactory description to give; but every item of explanatory matter is offered as a fact, well demonstrated by experience and subject to an unreserved guarantee. Separating the machines into their principal parts, the following important information may be given in regard to each:

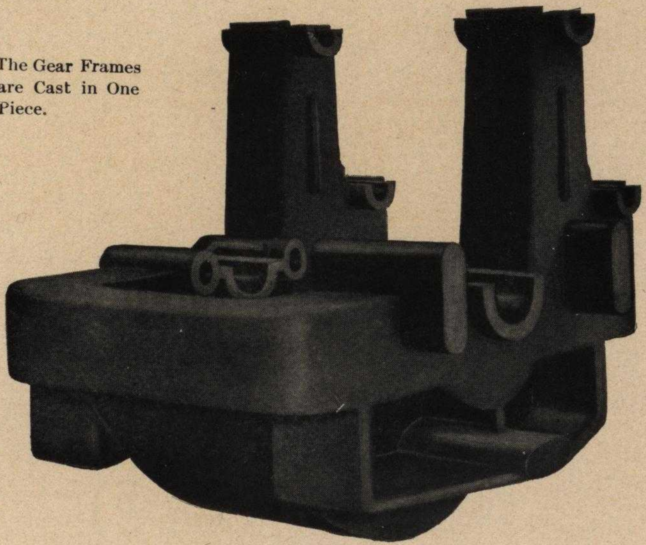
THE GEAR FRAMES

From the illustration upon the opposite page the design and construction of the gear frame is at once apparent. It shows the rough casting as it comes from the foundry and gives a clearer idea of the strength and weight of the part than would be possible to convey by use of words. It is common practice to build these frames in two or more pieces, depending upon the skids of the machine and such struts and staybolts as may be conveniently interposed for a mechanical connection between them; but a permanently rigid frame has never been built in that manner and therefore the design shown herewith, cast in one piece, with a heavy semi-cylindrical web connecting the two members, is offered as something superior to any similar part produced at the present time. Every stress of tension, compression, torsion or flexion is resisted by a liberal amount of metal, properly distributed, and under the most extreme working conditions to be realized it cannot break, spring, or even vibrate.

THE GEARS

The very highest grade of cast gears are employed upon all sizes of these machines. They are made from machine-cut patterns in our own foundry, where the production of such parts has been reduced to a science, both in moulding and in providing a mixture of metals which yields the combined hardness and toughness so much to be desired. They

The Gear Frames are Cast in One Piece.



are all extra heavy, well proportioned, and accurately bored.

The question of machine-cut gears for clay-working machines is already the subject of some discussion, and while it is generally admitted that considerable advantage may, in some cases, result from their use, machinery builders have not seemed ready to adopt them as a standard specification. Under ordinary prevailing brickyard conditions at the present time, the cast gears, if properly made, are in keeping with other methods employed in such cases; but it is eminently practicable to raise the standard of brickyard practice to a point where cut gears would be a decided advantage. Whenever desired by the purchaser, Brewer Machines will be supplied with cut gears and a dust-proof cover for them without any additional expense save that actually involved in the substitution, thus leaving the matter to be decided according to the circumstances which may surround any particular machine.

THE BEARINGS

The bearings are all of the capillary self-oiling pattern and require attention only about once in two weeks. The connection between the reservoir, with which each journal is supplied, and the bearing surface is not made with wicking, waste or anything of that sort, but all the oil which passes into the journal is thoroughly filtered. The oil reservoirs are fitted with self-closing lids, and wherever practicable the ends of the journals are blind-babbitted to make the bearing as nearly grit-proof as possible. All box caps are recessed into the frame and are secured in position by steel cap-screws, which pass through drilled holes. Liberal length is allowed each journal and only high-grade bearing metal is used for the babbitting, which is done with suitable appliances to insure proper alignment.

THE BACK-THRUST BEARINGS

The back-thrust bearings consist of two chilled-iron plates, ground to perfectly flat surfaces, running together in an oil reservoir which is separate from the gear-frame and attached to it by two very heavy bolts. These bolts not only take all the backward pressure of the pugging shaft but provide a means of easily moving the shaft ahead as wear occurs upon the expressing screw and liner; thus serving to maintain those parts up to their maximum efficiency throughout their life by keeping them close together, as they should be, and preventing the clay from slipping back over the edges of the screw blade. In short, the back-thrust bearings are self-aligning, self-oiling, independent, and adjustable, with all parts easily accessible when necessary, but at all times tightly covered to exclude dirt and grit.

THE PUGGING CYLINDERS

The pugging cylinders are made up of two parts machined and bolted together, also machined to the gear frame and attached thereto by means of six heavy studs set in the frame to register with drilled holes in the cylinder. The interior of the cylinder is ribbed laterally to prevent rotation of the clay with the shaft; also around the circumference to prevent back feeding. The upper half of the cylinder combines the feed roll casing and hopper, all cast in one piece, with suitable provisions for attaching the tackle hooks necessary for handling such parts.

THE PUGGING SHAFTS

The pugging shafts are made of close-grained cast iron; are finished throughout the entire length and range from 5 inches to 9 inches in diameter for the different sizes. (See specifications.) The pugging knives are mortised into the shaft and are held in position by taper keys. This form of construction provides a pugging arrangement which is easily adaptable to different clays and circumstances and which is subject to a movement through the clay with the least power compared with the amount of work accomplished.

THE PUGGING KNIVES

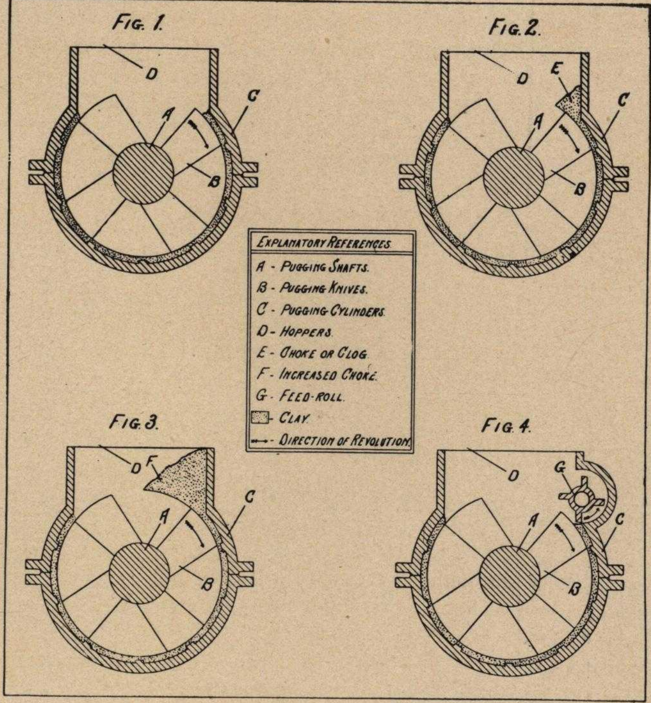
The pugging knives are made of forged steel, resembling somewhat the shape of a butcher's cleaver, one inch thick at the back and tapering to a comparatively sharp edge. The shanks are round, fitting easily into round holes in the shaft with taper keys to hold the knife in the desired position. This method is much superior to any of the others employed for a similar purpose; for instance, the practice of attaching knives to the shaft with bolts is objectionable on account of the fact that the knife shanks, bolt-heads and nuts all present very rough surfaces to the body of clay in the machine, which cuts down the efficiency and demands more power to rotate the shaft. Further, knives which have solid eyes have to be strung upon the shaft, and to remove one of them requires not only the removal of others but frequently the shaft itself has to be taken out of the machine. Inspection of a machine which has been run a short time readily shows the relative efficiency of the two methods. In one case the pugging shaft will be surrounded with a wad of clay extending throughout its length, while with the forged knives described above it will be found that they have been working clear down to the shaft, and that the shaft itself is polished bright, all of which indicates maximum work with minimum power. Another point in favor of the method described above is that the pitch of the knives may be readily changed when desired and that the whole knife may be set out from the shaft as the outside edges wear off; thus giving about twice the service possible with other forms of construction.

THE FEED ROLLS

As far as this line of horizontal brick machines is concerned the term "feed roll" is a misnomer, for it is not a roll and it does not feed. The device gained its name through previous attempts to use a roll for the purpose of keeping the hopper clear of an accumulation of clay and a consequent stoppage of the feed, but on account of clogging, causing excessive friction between the roll and its casing, the device has been abandoned. The necessity for it still remains, however, as will be seen by the sketches herewith. Fig. 1 shows a cross-section of a pugging cylinder and hopper with the wall or layer of clay around the interior as it is before choking begins, and Fig. 2 illustrates how the knives, revolving in the direction indicated by the arrow, are continually leaving particles of clay upon the edge of this wall until it gets into the condition shown by Fig. 3 when the opening of the hopper is much contracted and the feeding proportionally interrupted. In Fig. 4 the Brewer Feed Roll is shown in connection. It revolves in the direction indicated by the arrow, being driven from the pugging shaft by gears, and, on account of its cruciform shape, does not clog or heat. It keeps the hopper clear all of the time, assures a constant feed, materially increases the efficiency of the machine and requires very little power to drive. It is tightly encased to prevent leakage and is easily replaced when worn.

THE SCREW CASES

The screw cases or nozzles are machined and rigidly bolted to the cylinder. They are provided with removable liners which take the wear and are easily replaced when necessary.



THE SCREW CASE LINERS

The screw case liners are made of white iron corrugated laterally throughout the interior surface. The exterior is surrounded by a steam jacket by means of which the clay in the corrugations may be kept dry and hard for the purpose of creating a still closer casing for the screw. The object of this method is to prevent the clay, as it is being forced ahead, from turning with the screw or slipping back over the blades of it, thus confining the pressure to the die, increasing the output, and decreasing the power requirements.

THE EXPRESSING SCREWS

The expressing screws are made of white iron, a material which combines to the greatest possible extent the features of hardness and strength which are necessary for such parts. The shape is determined by the results of experiments involving hundreds of different patterns and extending over a period of nearly fifty years, and they show a higher efficiency than any other patterns now in use. To provide for clays of other than ordinary nature or for the production of ware having uncommon dimensions or shape, special patterns of screws are available which correspond with the peculiarities of the case.

Through the adjustable features of the back-thrust bearing, mentioned elsewhere, the wear which occurs upon the screw and the liner may be easily taken up and those parts kept closely fitting one another. In this way the service to be obtained before renewal is necessary is greatly increased and the operating expense reduced to a minimum.

THE HINGE FRONTS

In the design of all other parts of the machine the necessary strength and weight have been provided to concentrate as thoroughly as possible all the applied power to the die, and liberal safety factors have been introduced to insure the stability of the machine as a whole. It frequently happens, however, that dry clay, stones or similar unintended substances get into the machine through accident or carelessness, and then, if there is driving power enough, something must break. The hinge fronts, therefore, are provided with safety latches, strong enough to withstand any stress which should be safely applied without danger to other parts, but weak enough and inexpensive enough to be broken in time to prevent damage to other parts. In this case the safety device consists of any ordinary machine bolt of proper size, duplicates of which can be readily obtained at an ordinary hardware store anywhere. The parting of the safety bolt is not liable to cause injury to adjacent parts, and the arrangement of the latch is such that it may be readily disengaged even while heavy pressure is against it.

THE OUTBOARD BEARINGS

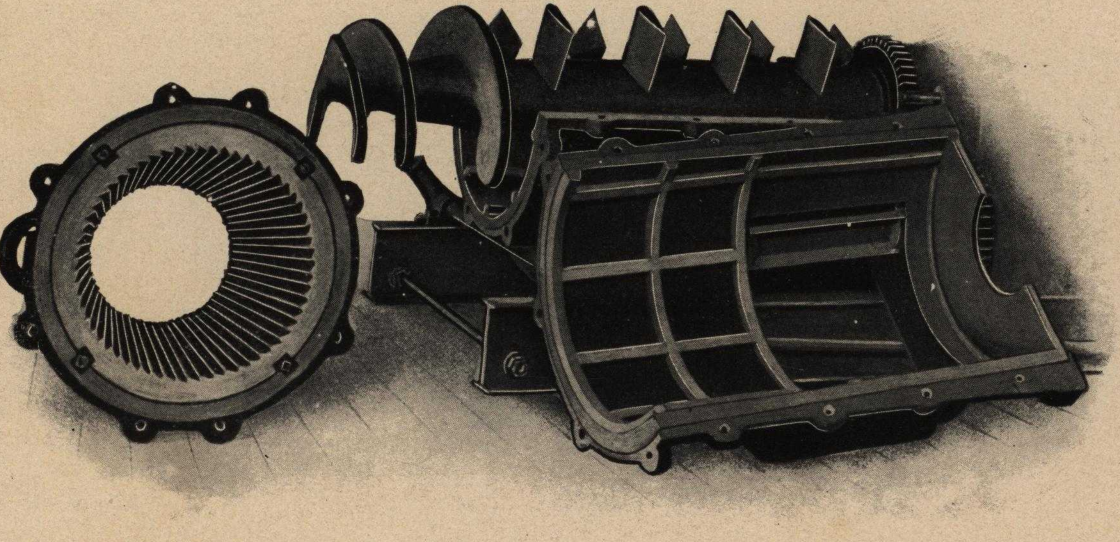
The outboard bearings for driving shafts are mounted upon the same I-beams which connect the other parts, thus making the machines entirely self-contained and only one foundation necessary.

THE DRIVING PULLEYS

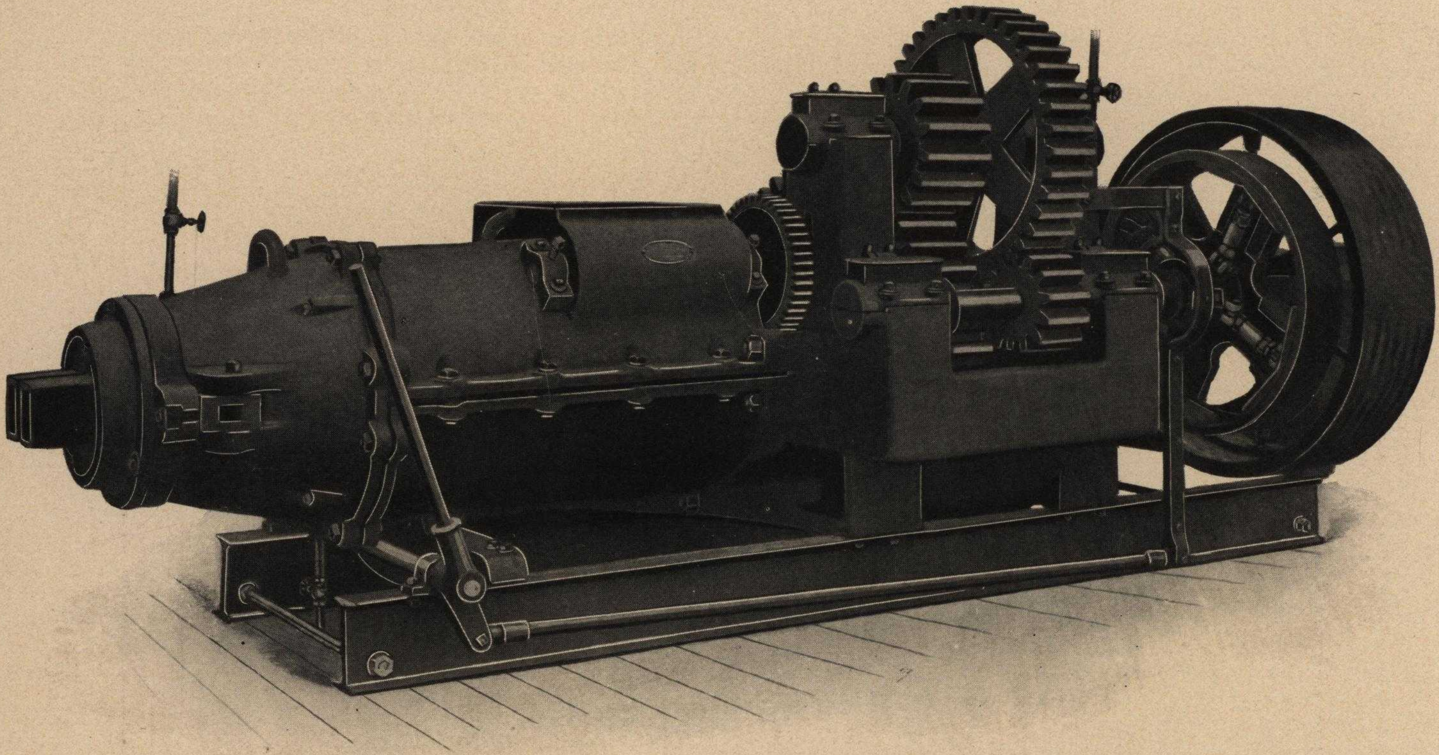
The driving pulleys are all of the friction-clutch pattern, the Type C, 4-arm clutch being furnished with the No. 25 and larger models, and the Type B, 2-arm clutch with the No. 24 and smaller machines. Both patterns are easily capable of transmitting double the power required of them and include all features of adjustability to take up wear and interchangeability of parts. Shoes are provided with hardwood soles and bushings lubricated with automatic compression grease cups.

THE CAPACITY

In rating the capacity of the several different sizes of these horizontal machines the unfavorable conditions which will frequently surround them have been taken into consideration. With an easy running clay, well tempered and regularly fed, any of them will produce fully double the output named in the specifications, and under any ordinary conditions which should be present in a well-conducted establishment the ratings given are those which the machines will actually produce with ease and safety. In other words, the ratings are very conservative and may be depended upon without danger of disappointment.



A View of the Interior Working Parts.



No. 25 Horizontal Brick Machine

The No. 25 Horizontal Brick Machine

Especially designed for the production of side-cut brick, end-cut brick, hollow brick and hollow blocks

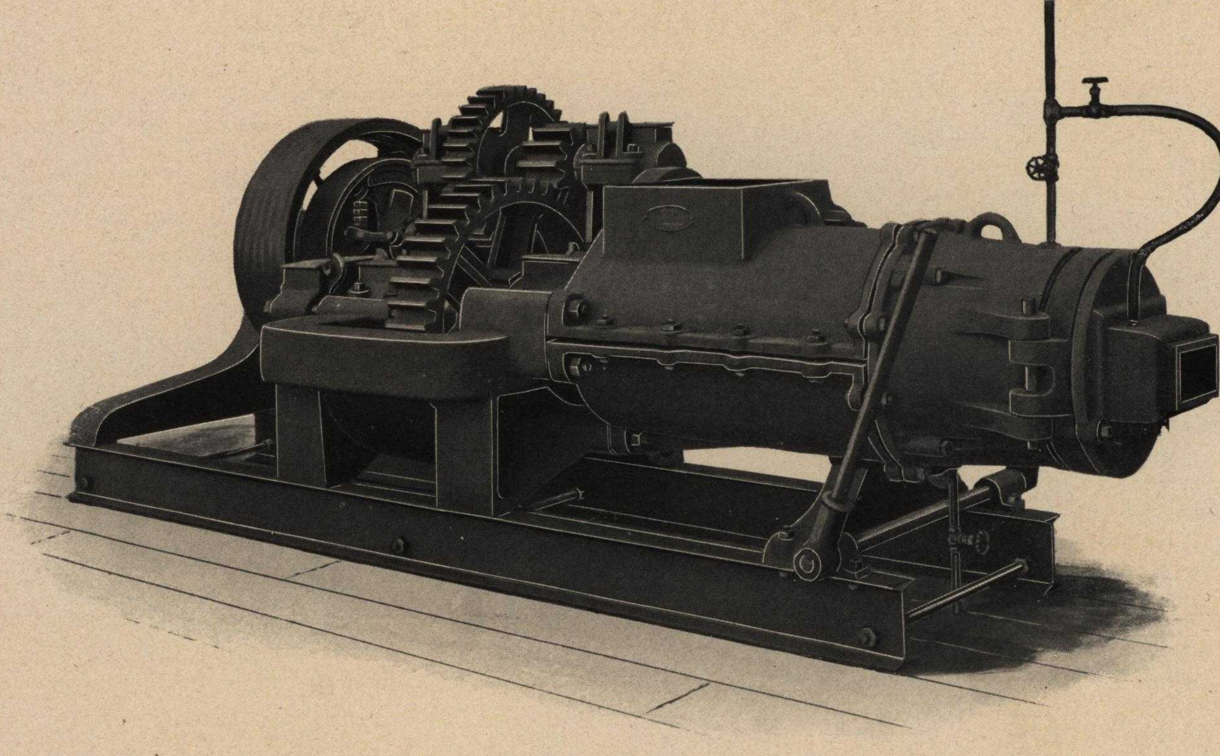
THE illustration upon the opposite page and the specifications given below are intended to convey an accurate idea of this machine and its capacity. All dimensions are faithfully stated and the weight is actual, as shown by the scales, not "estimated" or "about" so many pounds.

A capacity of 5,000 standard size brick per hour is guaranteed, but the actual amount of work the machine is capable of doing is much more than that under any ordinary conditions. There is, however, a great difference in the materials and methods and the rating given is intended to cover extreme cases.

Upon the pages next preceding will be found a complete description of the design and construction of all these horizontal machines. It brings out many valuable features and touches upon points concerning which the prospective purchaser should be informed.

Specifications

WEIGHT—11,970 pounds.
LENGTH—Over all, 12 ft. 6 in.
WIDTH—Over all, 5 ft. 11 in.
HEIGHT—Over all, 5 ft. 2½ in.
  From bottom of I-beam to top of hopper, 3 ft. 5½ in.
SHAFTS—Driving, 3 in. diameter, steel.
  Pugging, 8 in. diameter, cast iron.
  Intermediate, 3½ in. diameter, steel.
  Feed roll, 2 in. diameter, steel.
GEAR—First reduction, 6 in. face, 2¼ in. pitch, ratio 3 to 1.
  Second reduction, 8 in. face, 2¾ in. pitch, ratio 3 to 1.
  Feed roll, 2½ in. face, 1 in. pitch.
JOURNALS—12 in. long, self-oiling.
OUTBOARD BEARING for pulley shaft mounted on same I-beam as balance of machine.
DRIVING PULLEY—Friction clutch, Type C, 42 in. diameter, 12 in. face.
MOTOR DRIVE—The machine can be driven by electric motor without reconstruction.
SPEED OF DRIVING SHAFT—275 to 300 revolutions per minute.
DIRECTION OF REVOLUTION—As observer faces the die driving pulley runs *over* from *left* to *right*.
CAPACITY—5,000 standard size bricks per hour.



No. 24 Horizontal Brick Machine

The No. 24 Horizontal Brick Machine

Especially designed for the production of side-cut brick, end-cut brick, hollow brick and hollow blocks

ALTHOUGH smaller in size and lighter in weight this machine is as strong, large and heavy in proportion to its capacity as the larger sizes. Its design and construction are identical with that entering into the No. 25 machine, and the same liberal factors of safety are allowed in the proportions of all its parts.

In giving this size a guaranteed capacity rating of 3,000 bricks per hour, the various unfavorable conditions which will in some cases attend its operation are taken into consideration, and therefore the rating may be considered perfectly safe under any circumstances which may be present with ordinary working conditions.

The specifications given below are exact, and to be depended upon. The weight is not "estimated" or calculated, but is the actual scale weight which the buyer is entitled to. See general description upon preceding pages.

Specifications

WEIGHT—7,300 pounds.

LENGTH—Over all, 11 ft. 3 in.

WIDTH—Over all, 4 ft. 8 in.

HEIGHT—Over all, 4 ft. 2 in.
  From bottom of I-beam to top of hopper, 3 ft. 3 in.

SHAFTS—Driving, 2½ in. diameter, steel.
  Pugging, 6½ in. diameter, cast iron.
  Intermediate, 3 in. diameter, steel.
  Feed roll, 2 in. diameter, steel.

GEARS—First reduction, 4⅛ in. face, 1¾ in. pitch, ratio 2½ to 1.
  Second reduction, 6 in. face, 2¼ in. pitch, ratio 3 to 1.
  Feed roll, 2½ in. face, 1 in. pitch.

JOURNALS—12 in. long, self-oiling.

OUTBOARD BEARING for pulley shaft mounted on same I-beam as balance of machine.

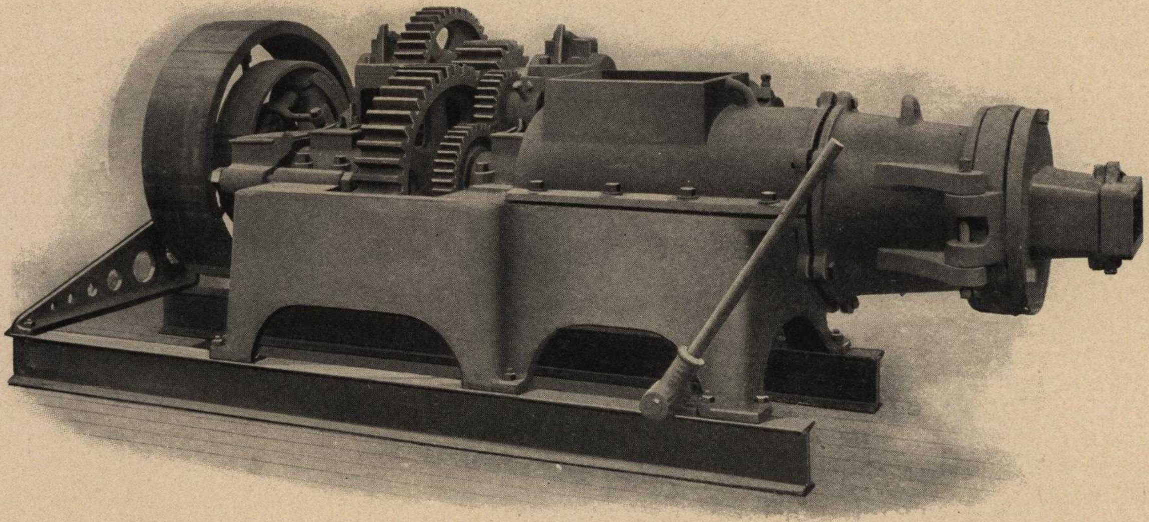
DRIVING PULLEY—Friction clutch, Type B, 34 in. diameter, 10 in. face.

MOTOR DRIVE—The machine can be driven by electric motor without reconstruction.

SPEED OF DRIVING SHAFT—250 to 275 revolutions per minute.

DIRECTION OF REVOLUTION—As observer stands facing the die driving pulley runs *over* from *left* to *right*

CAPACITY—3,000 standard size bricks per hour.



No. 23 Horizontal Brick Machine

The No. 23 Horizontal Brick Machine

Especially Designed for the Production of Side Cut Brick, End Cut Brick, Hollow Brick and Hollow Block

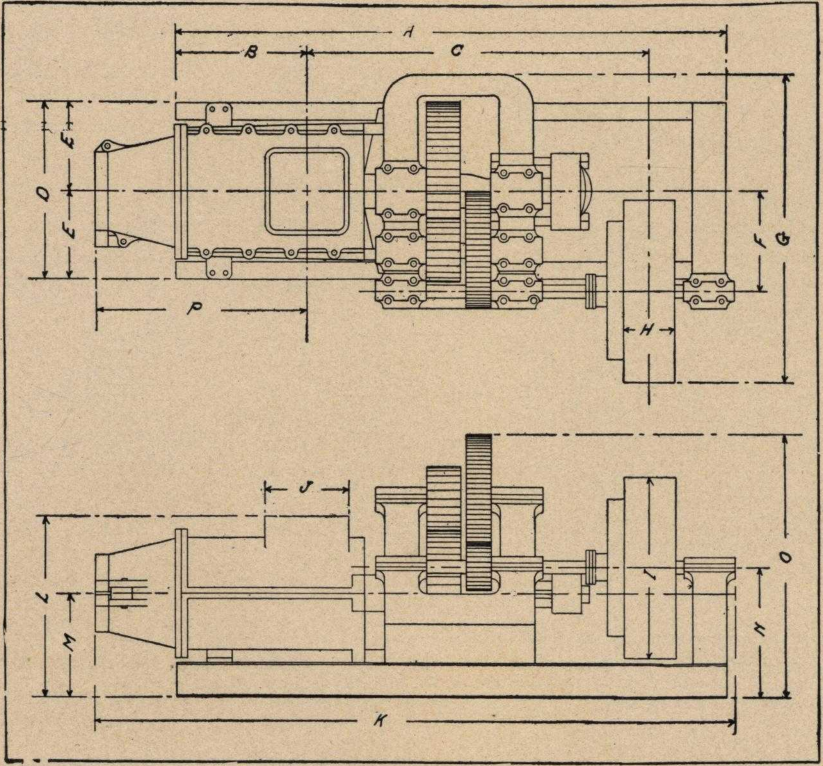
THIS is the smallest size of the line, but no details of design or construction have been sacrificed on account of its size. It is proportionally identical with the larger models except that the gear frame and lower half of the pugging cylinder are cast together in one piece, which may be considered an advantage. In all other respects the general description upon the foregoing pages applies to every detail of this size and from the specifications below it will be observed that all proportions are generous with liberal factors of safety.

It is desired to impress upon the reader that the rating of 2,000 bricks per hour capacity which is given this machine is a perfectly safe estimate even when taking into consideration average conditions both favorable and unfavorable which are generally present in actual practice. The machine is not claimed to be a large one, but it will perform with ease and safety the amount of work specified.

Specifications

Weight: 4,800 pounds.
Length: Over all, 9 ft. 6 in.
Width: Over all, 4 ft. 2½ in.
Height: Over all, 3 ft. 7 in.
From bottom of I-beam to top of hopper, 3 ft.
Shafts: Driving, 2½ in. diameter, steel.
Pugging, 5 in. diameter, cast iron.
Intermediate, 2⅞ in. diameter, steel.
Feed roll, 2 in. diameter, steel.
Outboard Bearing for pulley shaft mounted on same I-beams as balance of machine.
Journals: 9 in. long, self oiling.
Gears: First reduction, 4 in. face, 1⅜ in. pitch, ratio 2½ to 1.
Second reduction, 5½ in. face, 1¾ in. pitch, ratio 3 to 1.
Feed roll, 2½ in. face, 1 in. pitch.
Driving Pulley: Friction clutch, type B, 34 in. diameter, 8 in. face.
Motor Drive: The machine can be driven by electric motor without reconstruction.
Speed of Driving Shaft: 225 to 275 revolutions per minute.
Direction of Revolution: As observer stands facing the die the driving pulley runs *over* from *left* to *right*.
Capacity: 2,000 standard size brick per hour.

Brewer Horizontal Brick Machines



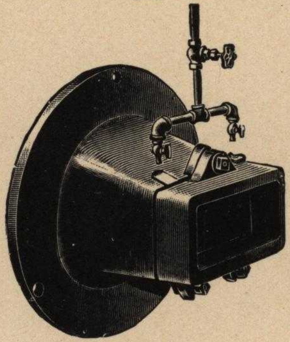
General Dimensions of All Sizes

	Dimensions in Inches		
	No. 25	No. 24	No. 23
A	132	120	96
B	34½	29	22
C	80½	76	62⅜
D	41	31½	30
E	20½	15¾	15
F	22⅝	19	18½
G	71	56	50½
H	12	10	8
I	42	34	34
J	18	15¾	15¾
K	149	135	114
L	41½	39	36
M	24	24	24
N	30¼	28½	24
O	62½	50	43
P	49	42½	36¼

Brick Dies

It takes a good die to make a good brick, no matter how good the machinery may be otherwise. Brewer dies are good dies

Fig. 1.

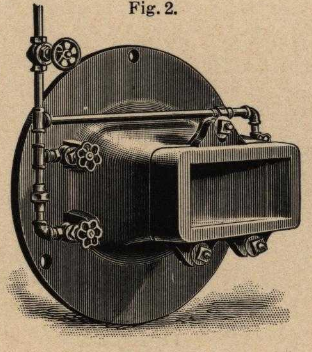


Water Lubrication.

THE work expected of a brick die is the formation of a column of clay which will have certain specified dimensions and an even, homogeneous texture throughout. This purpose is accomplished more or less effectively by hundreds of different methods incorporated into brick die designs, and three of those methods enter into as many different patterns of Brewer brick dies which have during fifty years of experience proved equal to all occasions. A very large number of Brewer dies will be found upon machines of other manufacture, which alone is a high recommendation of their efficiency, as there is scarcely another pattern which one of the three described below has not displaced under some of the unfavorable conditions which present themselves in the clay working business.

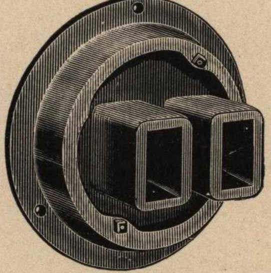
The Water Lubricating Die, illustrated by Fig. 1, is the pattern recommended for the great majority of cases where side-cut bricks are to be made. It is of simple and durable construction, not expensive to maintain, and moulds a good column of even texture from almost any clay suitable to be made into bricks. It has no complicated liners which wear out quickly and are expensive to replace, but is made up of castings the interior surfaces of which are thoroughly chilled and finished by special machinery. The design consists of a large forming die, to the front of which is attached a small finisher or slicker with slots between the two through which the water for lubrication enters and discharges, leaving the column smooth, dry and in excellent condition for handling. The shapes of these parts are such that the portions of the column subject to the least resistance during formation, and consequently inclined to issue more rapidly, are retarded; while the corners, which, on account of the greater surface of contact and proportionally increased friction, tend to issue more slowly, are lubricated with water to overcome the resistance and accelerate their issue to a speed equal to that of

Fig. 2.



Steam Lubrication.

Fig. 3.



Dry
Double Stream End Cut.

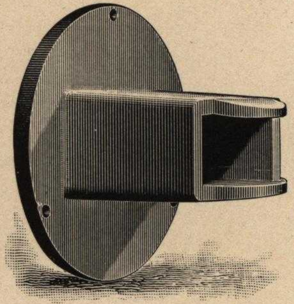
the balance of the column.

The Steam Lubricating Die, illustrated by Fig. 2, is of the same form and construction as far as general points are concerned as the die described above; but instead of lubricating with water between the die and slicker, jets of steam or condensed steam under pressure are directed against the corners of the column just as they are being formed in the rear part of the die. These steam jets are subject to independent regulation, so that as much or as little lubricant may be applied at each corner as may be necessary to make all parts of the column issue at the same speed. The column, having been roughly formed by the die, is finished by the slicker, which perfectly squares the corners and smooths and dries the faces without further lubrication, while the surplus lubricant is discharged through the bottom of the slot, leaving the column in excellent condition to be cut and handled. It is possible with this die to use both steam and water lubrication if desired, but such practice is not called for except in very rare cases, if at all.

The Dry Die, illustrated by Fig. 3 and Fig. 4, is the most simple of all, and has a great many points in its favor, particularly in the case of end-cut brick, when the style shown in Fig. 3 is especially recommended. All dry dies require an even temper of the clay being moulded to produce the best results; but although this requirement is perhaps a little less imperative with other patterns, it is a condition to be desired for other reasons than the satisfactory operation of the die, and therefore cannot be considered an objection. In this pattern an even flow, or issue, of the column is secured by shaping the interior surface according to circumstances.

The great variety of sizes required makes it practically impossible to carry brick dies in stock for immedaite shipment. They are therefore made to order after specifications are received and sufficient time must be allowd to cover the making of patterns, chills, castings, etc., which are required to produce a die of any given size or kind. Orders should specify the pattern desired, the dimensions of the column to be moulded and the name and number of the machine upon which it is to be used. If the machine is of other than Brewer manufacture the order or the request for quotations should be accompanied by a stiff paper template showing the size and shape of, also the size and location of the bolt holes in the front of the machine upon which the die is to be used. The template should be so marked that it will show which is the top side; and the

Fig. 4.



Dry.

distance from the front of the front auger or expressing screw to the part of the machine which the template represents should be written upon it, together with the name and address of the sender.

Standard Size Brick

THE standard size of a good, hard-burned, common building brick is 8¼x4x2¼ inches; these dimensions having been established by the National Brick Manufacturers' Association in 1893 and reaffirmed in 1899; but, peculiar to state, some of the most extensive manufacturers in the country who are members of the organization above mentioned, do not make their bricks of the dimensions specified, and this, together with the fact that other local associations of brick manufacturers and some state legislatures have specified different dimensions, makes it impossible to state that there is such a thing as a standard size of bricks which has been universally observed. It seems, then, as far as the individual manufacturer is concerned at least, that the size of his bricks should be the smallest which will be accepted in the market where they are to be sold.

While from the above it is evident that the standard size of a brick is still a question, there is one definite proportion which should always exist, viz., the length should be equal to twice the width plus the thickness of one mortar joint. The proper thickness of the mortar joint is generally considered to be ¼ inch, and if this specification can be accepted, the only remaining dimension to be settled is the width, for it is also generally conceded that two courses of brick should lay up 5 inches. With ¼ inch thickness of mortar this would leave the thickness of the brick 2¼ inches.

It should be observed that all the above refers to the dimensions of *brick* and not to those of the *die* or *mould* in which it is made. To arrive at the proper dimensions of the latter the shrinkage in drying and burning of the clay to be worked must be known or estimated.

Brewer Upright Drain Tile and Brick Machines

THE benefits of fifty years' experience in building this line of combined drain-tile and brick machines have been many, and while the older patterns have always been abreast with the times the new ones excel in all respects the models offered heretofore. There is probably not another machine of this character which is in such extensive use under such a great diversity of conditions and as a consequence every weak point has been developed and every inconvenient or undesirable feature brought plainly to view. The reconstruction, therefore, has been far-reaching and complete, with ample time to settle upon patterns which would retain all the good points and discard the bad ones. New patterns throughout have been provided and everything has been done, regardless of any reasonable expense, which could be done to make the entire line modern in every respect. Some prominent points of superior construction are noted in the paragraphs which follow.

THE PUGGING CYLINDERS, including all of the vertical portion of the main frame, are cast in one piece with a sufficiently wide margin of safety to prevent any possibility of breaking. This provides a rigid construction impossible to attain in any other manner and preserves the alignment of the pugging shaft without any bearing in the clay at its lower end. Openings at suitable points with easily removable covers allow ready access to the knives upon the upright shaft and the interior surface of the whole cylinder is corrugated to prevent a rotary motion of the clay or "back feeding."

THE GEAR FRAMES are also one-piece castings, heavier than they have ever been made before, providing for longer journals, heavier shafts and gears as well as better appearance.

THE GEARS. The very highest grade of cast iron gears are used on all sizes. They are made from machine cut patterns in our own foundry where gear making has been reduced to a science and the mixture of metals used is prepared especially for the purpose.

THE UP-THRUST BEARINGS of the pugging shafts are of the Marine Pattern, which consists of wide deep grooves around the shaft at the point where it runs in the journal with a grooved box and cap to match. This pattern provides much more thrust surface than can be obtained by means of collars; a more rigid shaft, due to better support; more room at the feeding point of the machine; a smooth exterior upon which clay will not pile up; and a bearing into which grit or foreign substance cannot enter.

THE BACK THRUST BEARINGS for auger shafts are self-oiling, self-aligning and adjustable. To the shaft is attached a phosphor bronze plate which runs against a chilled iron plate anchored to the frame of the machine. The whole bearing runs in a reservoir filled with oil, the bronze plate having radial grooves which carry up the lubricant and keep the surfaces as nearly frictionless as possible at all times. Both plates are subject to easy removal when worn without disturbing other parts; may be replaced with new ones at a nominal expense and the whole bearing is closely covered to exclude grit and foreign substances.

THE PUGGING SHAFTS are round, of large diameter (see specifications) and are made of close-grained cast iron. The pugging knives, which are of forged steel, are mortised into the shaft and held in position with taper keys. This method permits the easy adjustment of the pitch of each knife; does away with the wad of clay which would accumulate around a square shaft to which the knives would be attached with bolts, and insures a free working knife clear down to the shaft, which, being round, will polish bright and be subject to easy movement through the mass of clay surrounding it. This method also allows the knives to be set out as they wear, and further, the upright cylinder being somewhat tapering, the upper knives after worn out in their original position, may be moved down to the next lower location, where they are as good as new ones. All this aids greatly in keeping down the operating expense of the machine as well as increasing the efficiency.

THE AUGERS or EXPRESSING SCREWS are of entirely new pattern, their form and pitch being determined by the results of a great many years' experience and experiments with hundreds of different styles. They are made of white-iron, a material which combines to the greatest possible extent the features of hardness and toughness necessary for such parts and which will give three times the service of ordinary cast or chilled iron. The front section of all augers is closely surrounded by a corrugated casing also made of white-iron and so mounted in the face plate that it may be easily replaced when worn.

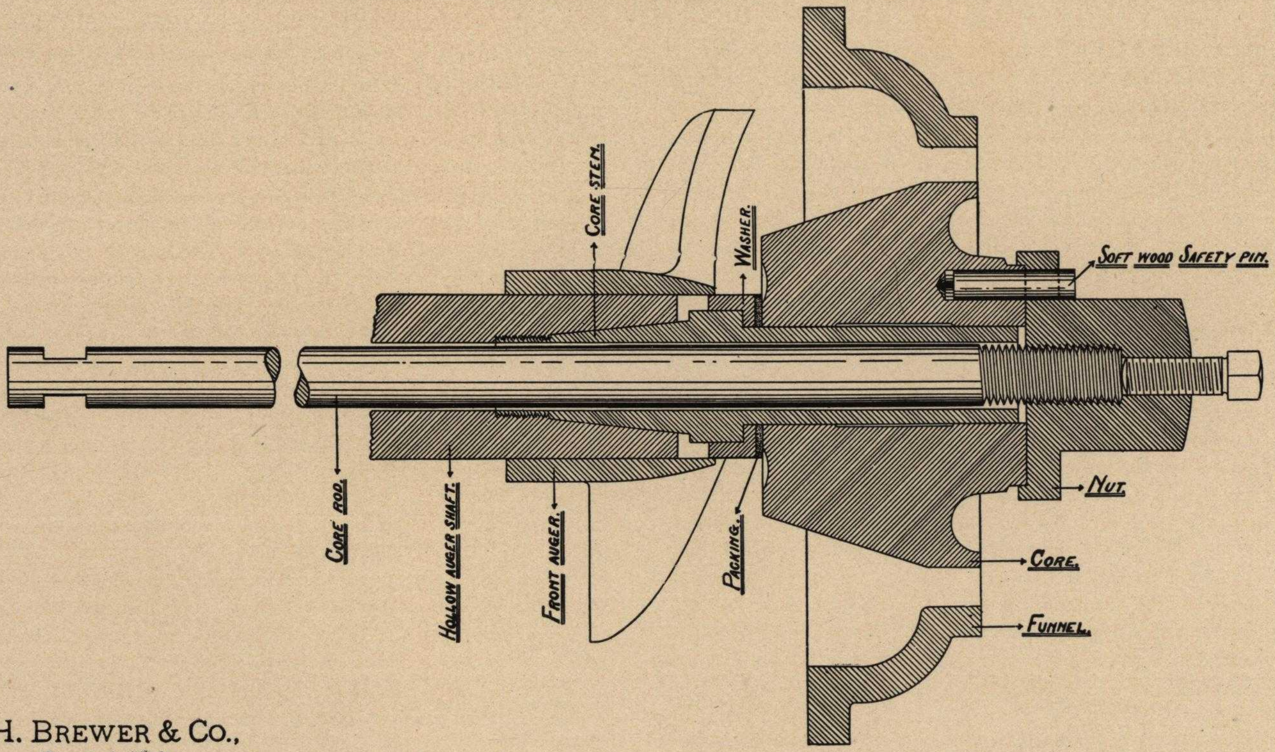
THE METHOD OF HOLDING CORES of tile dies without bridge or bracket is fully illustrated and described upon pages 22 and 23, to which especial attention is directed.

THE DRIVING PULLEYS are all of the Friction Clutch pattern, the Type C, 4-arm clutch being furnished for the No. 10A size, and the Type B for the No. 9B and smaller sizes.

THE CAPACITY. In rating the capacity of the several different sizes the unfavorable conditions which will sometimes surround them have been taken fully into consideration and the following table prepared to show the output of several different kinds of ware under average conditions.

Machine Number	Number of Pieces per Hour			
	4 in. tile	8 in. tile	12 in. tile	Sidecut brick
10A	2500	1500	750	5000
9B	1500	750	500	3000
5B	1000	500	250	2000

The above does not by any means show maximum capacity under favorable conditions, neither does it specify all the different kinds of ware the machines are capable of making, but the intention is to give as accurately as possible a general idea in a manner which will do justice to the machine and not mislead the prospective purchaser.



H. BREWER & CO.,
Tecumseh Mich.

The Brewer Hollow Auger Shaft

And Method of Supporting Cores of Tile Dies

THE arrangement illustrated in detail upon the opposite page serves to support the cores of tile dies without anything in the nature of a bridge or bracket over or around which the clay must pass just before or as it is being formed into shape. It is a most valuable feature to every manufacturer of drain tile, and is deserving of especial notice, as it differs from anything else used for the same purpose now offered to the trade. Bridges, brackets, and the like, for supporting the tile die cores are very objectionable because they weaken the ware by separating the clay while it is under pressure, just as it is being shaped, with the result that it fails to thoroughly reunite into a mass of even texture without strain between the particles. With some clays this strain causes the tile to crack lengthwise before they dry, with others before the burning is finished; and tile, made from any clay, whether they crack or not, have less strength if moulded by a die in which the core is held by a bridge or similar device than would be the case if they were made by one in which the forming, or passage of the clay, was not so interrupted. Bridges are also an objectionable feature of a tile die because they obstruct the opening and retard the passage of the clay, making the output less and the power requirements greater.

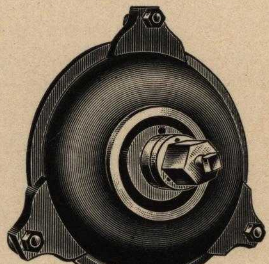
Machines of other manufacture, having hollow auger shafts for core supporting and other purposes, have been offered to the trade, but practical experience with them has not been generally satisfactory because the clay worked into the interior of the shaft and was not only very difficult to remove but destructive to the parts. A passing glance at the sketch herewith will be sufficient to convince anyone that with the Brewer plan it is impossible for the clay to get inside of the hollow shaft, as there is no place for it to enter.

In some of the early Brewer patterns the core was supported by the auger shaft, being attached to it by a sort of stem, and held in place by a nut on the end of this stem. In these machines the cores were free to revolve, and their forward pressure, while working, was taken by the nut above mentioned. Sometimes the spiral motion of the column, resulting from the revolving core and the heating caused by the forward pressure, was objectionable, but these undesirable features have been entirely eliminated by the substitution of the arrangement illustrated.

The auger shaft is hollow throughout its length, and has in the front end a taper socket into which the cast-steel core stem is drawn with a left hand thread. A recessed washer, or collar, is placed over this core stem to protect the otherwise exposed portions of it from wear, and the core is placed next to it with a small space intervening for a leather washer or packing. The core is held in position by a large recessed nut which engages the threads upon the end of the core-rod, and is locked in position by a set screw. Through the flange of this nut and into a hole in the core itself is inserted a safety pin which prevents the core from turning under ordinary conditions, but which will shear off in case of accident or neglect. The core-rod passes through the auger shaft to the rear end of the machine, where it is held rigidly by an anchor plate engaging the notches shown in cut. The entire plan is a decided success, is no experiment, and has no objectionable features.

Drain Tile Dies

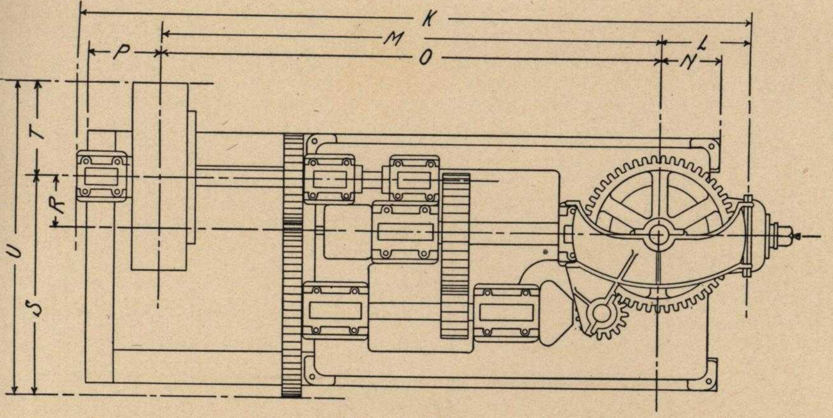
Drain-tile dies having the dimensions shown in the table herewith are considered standard, and are carried in stock for immediate shipment at any time. All dies of other dimensions or patterns are made to order, from three to six days being required to produce them.



Brewer Tile Dies are made from a very hard metal, just as hard as it can be and still allow the proper machining of the casting. They are produced in our own foundry where the requirements are known, and nothing but an excellent casting will pass inspection. The advantage of a tile die made from a close hard casting is appreciated by experienced tile makers and although it is a comparatively small item it is one of the many little things which lend to the efficiency and popularity of Brewer Drain Tile Machines. Average weight of Tile Dies, each 175 pounds.

Standard Dimensions of Drain Tile Dies

Size of Tile	Diam. of Core in Inches	Bore of Funnel in Inches	Thickness of Shell	Size of Tile	Diam. of Core in Inches	Bore of Funnel in Inches	Thickness of Shell
2.5	2 75	3 75	.5	8	8.8	10.4	.8
3	3.3	4 4	.55	9	9.9	11.6	.85
3.5	3.85	4.95	.55	10	11	12.8	.9
4	4.4	5.6	.6	12	13.2	15 2	1
4.5	4.95	6.15	.6	14	15.4	17.6	1 1
5	5.5	6.8	.65	15	16.5	18.8	1.15
6	6.6	8	.7	16	17.6	20	1.2
7	7 7	9.2	.75	18	19.8	22 4	1.3



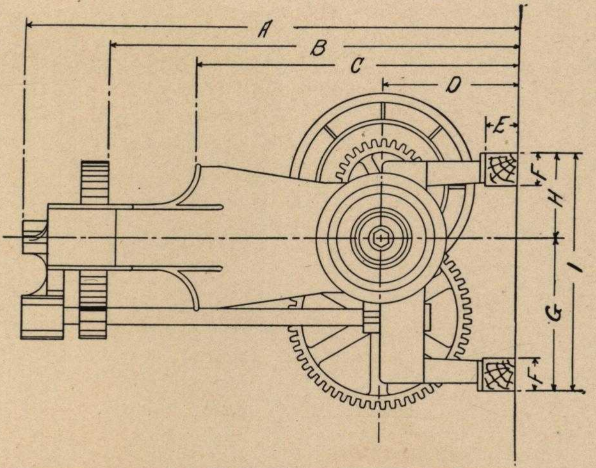
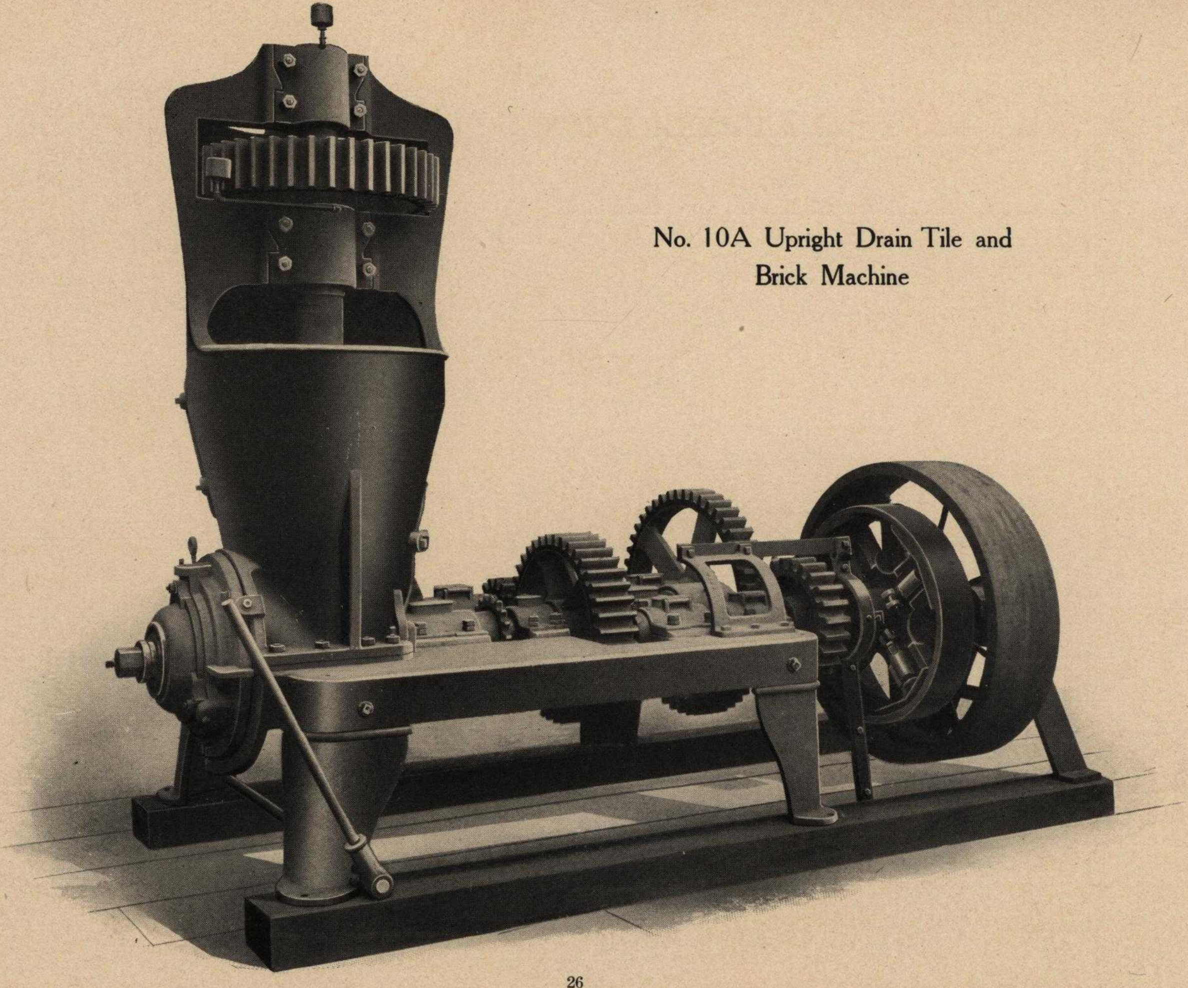


Table of Dimensions Brewer Upright Drain Tile and Brick Machines

	Machine Number				Machine Number		
	10A	9B	5B		10A	9B	5B
A	105	91½	87	L	17	15½	10¾
B	85	74½	71	M	91	89⅛	78
C	67	58½	56	N	12¼	10½	8
D	30	24½	24	O	91	89⅛	78
E	6	6	6	P	14	12½	12
F	8	8	6	R	8	9 5/16	11
G	34	26½	21½	S	43	31	32
H	28	16	20¾	T	22½	17	17
I	62	47½	42¼	U	65½	48	49
K	126	126	106				



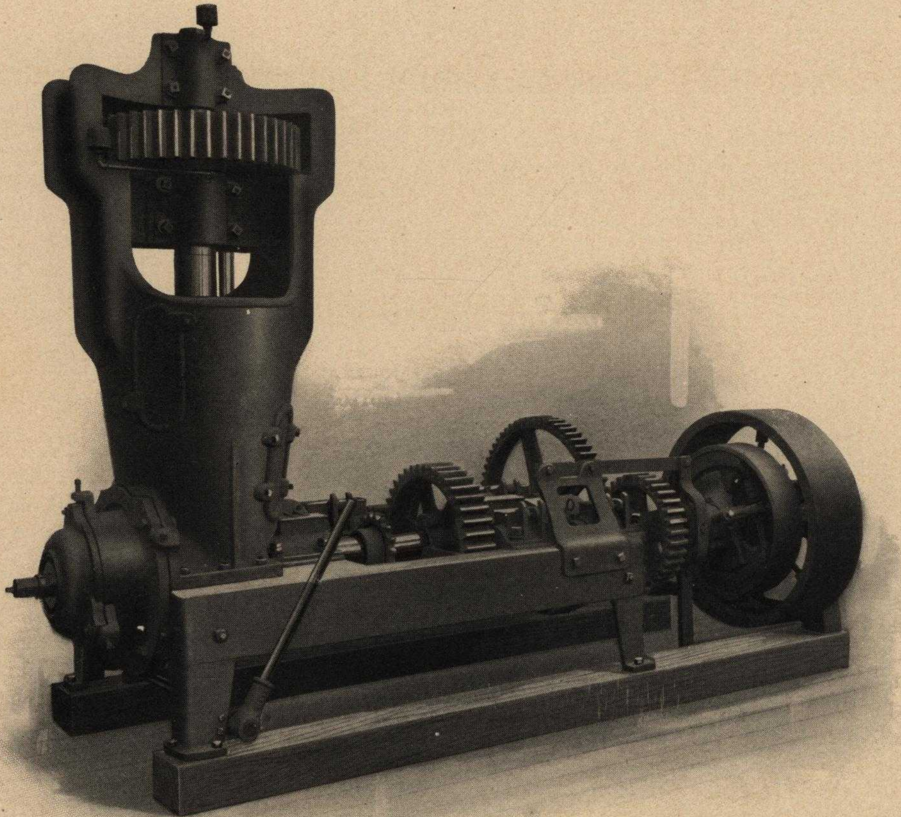
No. 10A Upright Drain Tile and Brick Machine

The No. 10A Upright Drain Tile and Brick Machine

THIS size has won an enviable position with the users of large capacity machines and its output seems to be limited only by the ability to handle the product. The standard pattern as shown by the engraving upon the opposite page has the opening to receive the clay upon the right hand side as observer faces the die, but when desired the machine can be built with the opening directly in front when it may be fed from either side.

Specifications

WEIGHT: 10,510 pounds.
LENGTH: Over all, 10 ft. 10 in.
WIDTH: Over all, 5 ft.
HEIGHT: Over all, 8 ft. 4 in.
From bottom of leg to point where clay is fed in, 5 ft. 1¾ in.
SHAFTS: Driving, 3 in. diameter, steel.
Intermediate horizontal, 3½ in. diameter, steel.
Outside upright, 3½ in. diameter, steel.
Pugging, 6 in. diameter, cast.
GEARS: First reduction, spur, 4⅜ in. face, 2¼ in. pitch, ratio 2 to 1.
Second reduction, spur, 6 in. face, 2 in. pitch, ratio 2½ to 1.
Second reduction, bevel, 4½ in. face, 2¼ in. pitch, ratio 1½ to 1.
Third reduction, spur, 6 in. face, 2¼ in. pitch, ratio 3 to 1.
JOURNAL BOXES: 10 and 12 in. long.
OUTBOARD BEARING and independent leg for driving shaft.
DRIVING PULLEY: Friction Cluch, Type C, 45 in. diameter, 12 in. face.
MOTOR DRIVE: If so specified in the order suitable first reduction gears to permit direct connected electric motor drive will be substituted without extra expense.
SPEED OF DRIVING SHAFT: 180 to 225 revolutions per minute.
DIRECTION OF REVOLUTION: The pulley of the standard machine is to be driven over from left to right as observer stands facing die, but if so specified in the order necessary parts will be furnished to provide for driving in the opposite direction without extra charge.
CAPACITY: 5,000 to 7,500 standard size brick per hour under average favorable conditions. Other kinds and sizes of ware in proportion.



No. 9B Upright Drain Tile and Brick Machine

The No. 9B Upright Drain Tile and Brick Machine

THE hundreds of tile makers who have used the No. 9A pattern will appreciate the superiority of this one, which, having passed through complete reconstruction, is without any question closer to the point of perfection than has ever before been attained by a medium capacity machine. It is worth while to read the foregoing general description to get a thorough understanding of the construction which is certainly high-grade and in advance of all previous practice.

Specifications

WEIGHT: 6,820 pounds.

LENGTH: Over all, 10 ft. 6 in

WIDTH: Over all, 4 ft. 7 in.

HEIGHT: Over all, 7 ft. 2 in.
From bottom of leg to point where clay is fed in, 4 ft. 5 in.

SHAFTS: Driving, 2⅞ in. diameter, steel.
Intermediate horizontal, 3½ in. diameter, steel.
Outside upright, 3 in. diameter, steel.
Auger, 4 in. diameter, steel.
Pugging, 5½ in. diameter, cast iron.

GEARS: First reduction, spur, 3⅜ in. face, 1½ in. pitch, ratio 2 to 1.
Second reduction, spur, 5 in. face, 1¾ in. pitch, ratio 3 to 1.
Second reduction, bevel, 5 in. face, 1¾ in. pitch, ratio 2 to 1.
Third reduction, spur, 5½ in. face, 1⅞ pitch, ratio 3 to 1.

JOURNAL BOXES: 9 and 12 in. long.

OUTBOARD BEARING and independent leg for driving shaft.

DRIVING PULLEY: Friction Clutch, Type B, 34 in. diameter, 10 in. face.

MOTOR DRIVE: If so specified in the order suitable first reduction gears to permit direct connected electric motor drive will be substituted without extra expense.

SPEED OF DRIVING SHAFT: 150 to 180 revolutions per minute.

DIRECTION OF REVOLUTION: The pulley of the standard machine is to be driven over from left to right as observer stands facing die, but if so specified in the order necessary parts will be furnished to provide for driving in the opposite direction without extra charge.

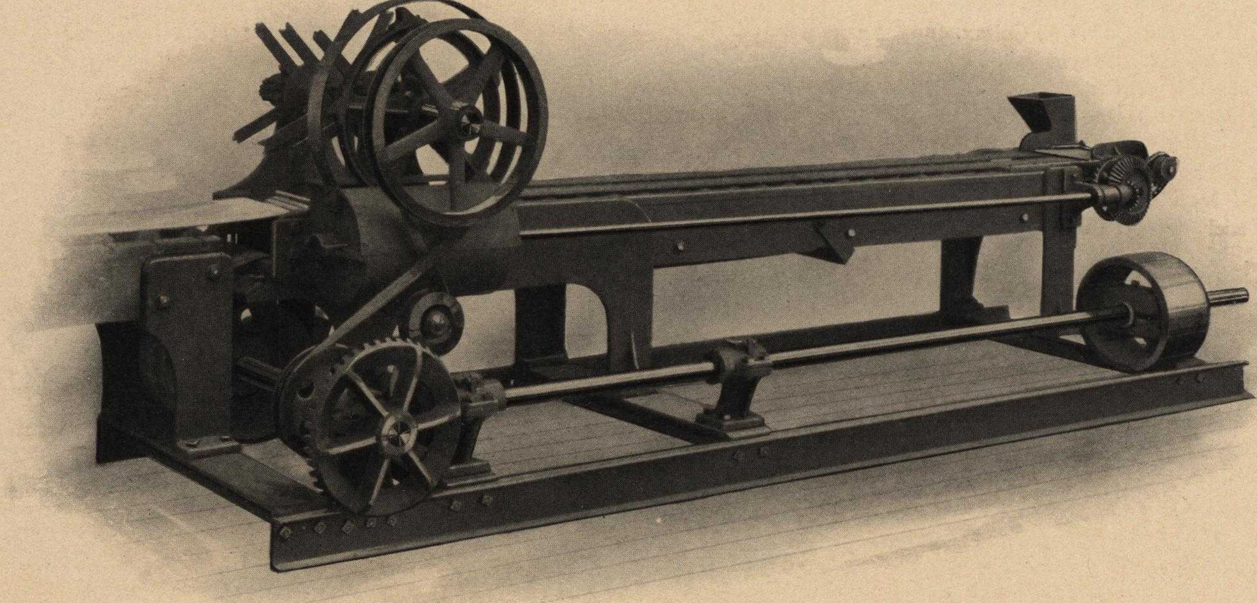
CAPACITY: 2,500 to 4,000 standard size brick per hour under average favorable conditions. Other kinds and sizes of ware in proportion.

References

A Partial List of Users of Brewer Upright Machines

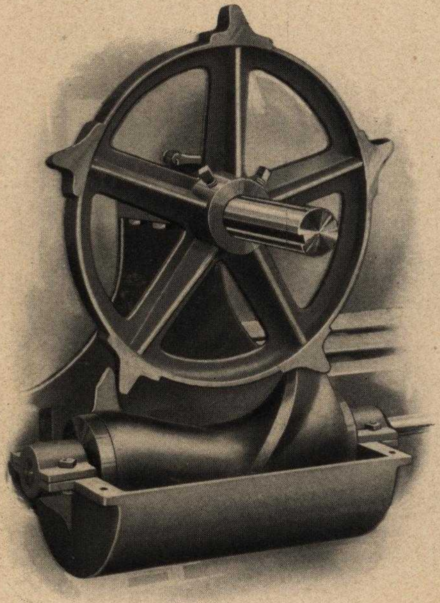
D. H. Arbogast & Son, Farmer City, Ill.
Argillo Works, Carbon Cliff, Ill.
H. M. Baldridge, Illiopolis, Ill.
Batavia (Ia.) Brick & Tile Co.
J. M. Beale & Co., Paw Paw, Ill.
Bingham Lake (Minn.) Brick & Tile Co.
August Boettcher, Brillion, Wis.
Bradshaw & Co., Fort Dodge, Ia.
Brick & Drain Tile Co., Grand Blanc, Mich.
Brunswick (Mo.) Brick & Tile Co.
Henry J. Bunte, Flat Rock, Mich.
Burlington (Wis.) Brick & Tile Co.
C. H. Cass, Bridgewater, Ia.
Columbus Clay Mfg. Co., Black Lick, O.
C. H. Comstock, Ashkum, Ill.
L. H. Cordes & Co., Watertown, Wis.
Corrington Brick & Tile Co., Moweaqua, Ill.
Cheek & Belvin, Durham, N. C.
C. D. Cowgill, Brocton, Ill.
Creighton (Mo.) Clay Co.
J. T. Cuppy, Chalmers, Ind.
Dallas Co. Brick & Tile Co., Adel, Ia.
J. W. Darby, Greenfield, Ia.
Darlington (S. C.) Brick Co.
Davenport (Ia.) Paving Brick & Tile Co.
Fairfield (Ia.) Brick & Tile Co.
Fertile (Minn.) Brick & Tile Co.
Oscar Frazee, Moweaqua, Ill.
H. P. Frisch, Mt. Pulaski, Ill.
Gladbrook (Ia.) Pressed Brick Co.
D. H. Haeger, Estate, Dundee, Ill.
Chas. Hall, Cass City, Mich.
C. A. Harbaugh, Mendota, Ill.
Hardy & Whipple, Union City, Tenn.
Jacob Hartsig, Warren, Mich.
Holdridge & Babb, Corwith, Ia.
A. E. Hadaway, Cumberland, Ia.
F. W. Heidenreich, Hedrick, Ia.
Heilman Bros., Tiffin, O.
C. M. Hester, Watsontown, Pa.
Hill Bros., Minburn, Ia.
Jno. L. Hull, Cambridge, Ill.
Jakin (Ga.) Brick Co.
Jefferson (Wis.) Brick & Tile Co.
Jerome (Mich.) Brick & Tile Co.
Aug. H. Johnson, Mediapolis, Ia.
Keswick (Ia.) Brick & Tile Co.
Kellogg (Ia.) Brick & Tile Co.
Kraeger Turpentine Cup Co., Daisy, Tenn.
Otto Krauss, Plymouth, Wis.

H. Lambert & Son, Beaverville, Ill.
S. K. Leacox, Keota, Ia.
H. K. Lee, New Richmond, Ind.
M. J. Lee Drain Tile Co., Colfax, Ind.
Fred Linenfelser, Maybee, Mich.
Liscomb (Ia.) Brick & Tile Co.
Livermore (Ia.) Brick & Tile Co.
Lombard (Ill.) Brick & Tile Co.
J. C. McDonald & Son, Detroit, Mich.
Dugald McGibbon, Shedden, Ont., Can.
McKissick & Kiles, De Soto, Ia.
M. C. Madsen, Hutchinson, Minn.
Mamer Bros., Campus, Ill.
J. W. Markham, Traverse City, Mich.
C. A. Marshall, Cresco, Ia.
L. H. Martin, Dwight, Ill.
Martin & Von Oven, Naperville, Ill.
Martin & Younkin, New Sharon, Ia.
J. J. Middlesworth, Duffield, Mich.
J. A. Miller & Co., Bascom, O.
Munson Bros., Capron, Ill.
B. F. Neff, Bryan, O.
Jno. M. Nichols, Dyersburg, Tenn.
M. Nisen, Union Grove, Wis.
Ottumwa (Ia.) Brick & Construction Co.
Oskaloosa (Ia.) Paving Brick Co.
L. F. Patterson, Bainbridge, Ga.
Pella (Ia.) Drain Tile Co.
L. B. Pierce, Winfield, Ia.



No. 14 Automatic Brick Cutter (End Cut)

No. 14 Automatic Brick Cutter (End-Cut)



This design incorporates all those desirable features of simplicity, strength, durability, accurate government, etc., in a manner seldom found in such machines, especially those intended to cut the product of double-stream dies. The cam shown by the engraving on this page is of a peculiar and original form, affording much more accurate and positive control than the cams or mutilated gears usually employed for the purpose of guiding the wires upon the reel-arms straight through the column; and the transfer device for removing the brick to the off-bearing belt is strikingly simple, yet most effective in its action.

As ordinarily built this machine is adapted to the cutting of two columns, issuing side by side on edge a short distance apart; but it is capable of cutting a single column issuing on edge or flatwise as circumstances may require.

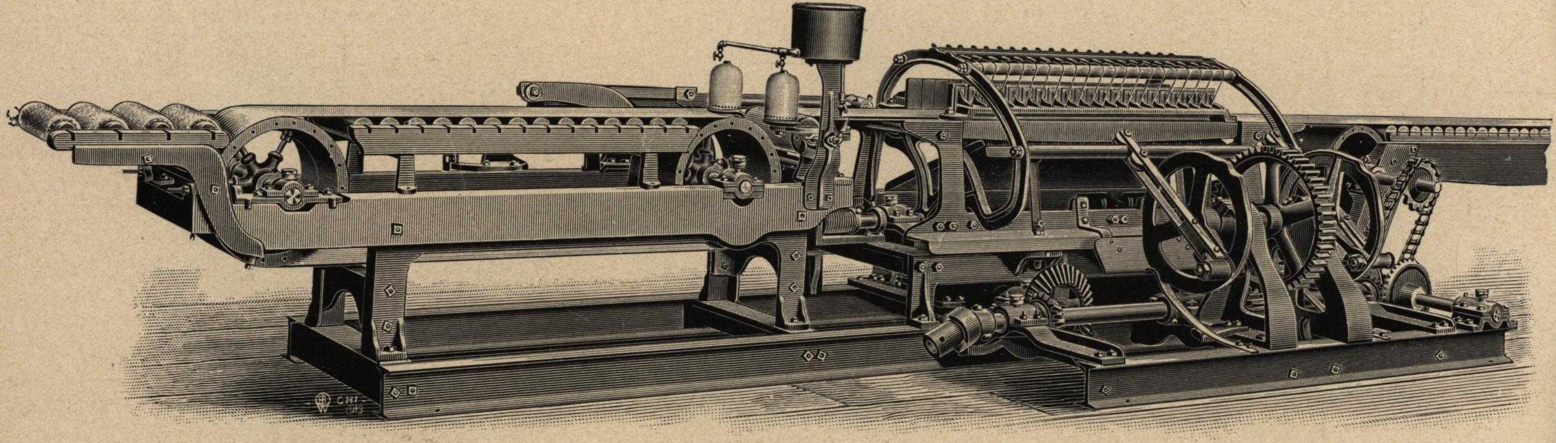
The wires are short, attached to spring holders, not easily broken, but quickly and easily replaced while the machine is running. They cut down through the column upon a flexible belt, making a smooth straight cut with the least possible liability of breaking out the bottom edges of the bricks.

The standard pattern sander distributes sand upon the bottom edge of the column only, but at a slight advance in price a suitable device for sanding all sides of the column will be furnished.

Specifications

Weight: 2,200 pounds.
Length: Over all for double column, 22 ft.
Over all for single column, 25 ft.
Off-bearing table, 12 ft.
Width: Over all, 3 ft. 3 in.

Height: To top of belt, 2 ft.
Speed of Driving Shaft: Proportional to output.
Direction of Revolution: Over from left to right as observer faces delivery end.
Capacity: 15,000 or less brick per hour.



No. 65 Automatic Brick Cutter

No. 60 Series Automatic Brick Cutters

FOR side cut brick produced in large quantities the No. 65 Automatic Brick Cutter illustrated upon the opposite page is offered as a first-class well built machine, while the No. 61, illustrated upon page 36, is a machine of practically the same construction suitable for side cut brick produced in quantities not exceeding 5,000 per hour.

These machines are particularly noticeable on account of the simplicity of their design and having been in satisfactory service for a number of years the efficiency of their execution is well demonstrated. Prominent among the details of design is the fact that all power required for moving the wires through the clay and for returning the table is derived from an entirely independent source and the column as it issues is called upon to do no work save measure itself. No slip-belts or friction devices are employed and all movements are absolute and governed by the speed of the column whatever it may be.

The cutting wires are short and have a shearing motion through the clay, a feature which reduces to a minimum the breakage of wires, but having been broken from any cause they are easily replaced with new ones without stopping the machine.

In numerous cases these cutters have been furnished to cut a variety of ware, including end cut brick, both solid and hollow, double and triple stream, hollow blocks, conduit and the like. The machines are primarily side cut, however, and these special features are incorporated only when the variety of ware produced in a single plant call for unusual arrangements.

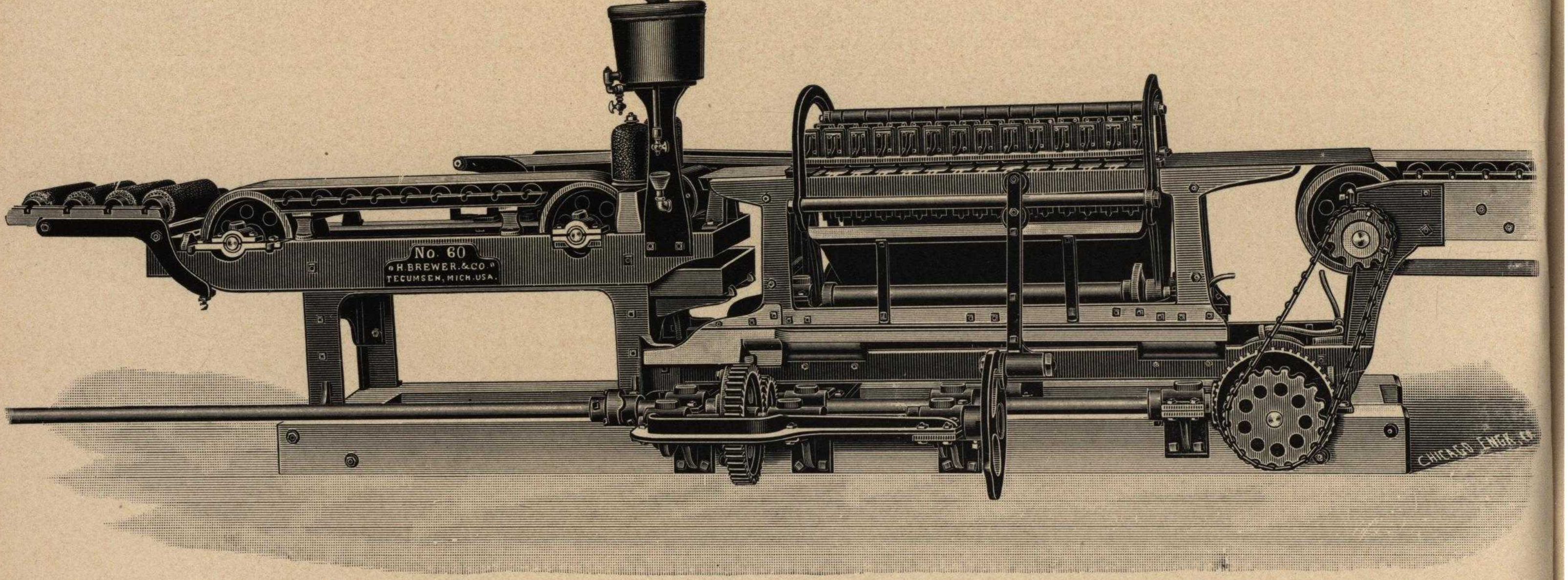
Specifications

Number 65

WEIGHT: 4,500 pounds.
LENGTH: Over all, 35 feet.
Off-bearing table, 18 feet.
WIDTH: At widest point, 4 ft. 6 in.
HEIGHT: To lower side of clay column, 2 ft. 6 in.
SPEED OF DRIVING SHAFT: Proportional to output.
DIRECTION OF REVOLUTION: Over from left to right as observer stands facing delivery end.
CAPACITY: 15,000 or less side-cut brick per hour.

Number 61

WEIGHT: 2,700 pounds.
LENGTH: Over all, 24 ft.
Off-bearing table, 12 ft.
WIDTH: At widest point, 3 ft. 6 in.
HEIGHT: To lower side of clay column, 2 ft. 5 in.
SPEED OF DRIVING SHAFT: Proportional to output.
DIRECTION OF REVOLUTION: Over from left to right as observer stands facing delivery end.
CAPACITY: 5,000 or less side-cut brick per hour.

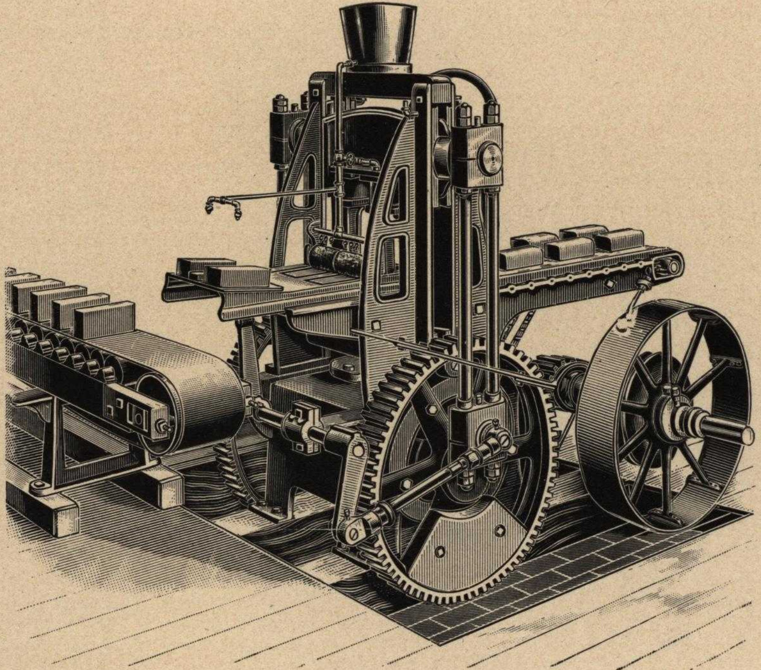


No. 61 Automatic Brick Cutter

References

A Partial List of Users of Brewer No. 60 Series Automatic Brick Cutters

American Brick & Tile Co., Mason City, Ia.
D. H. Arbogast & Son, Farmer City, Ill.
Baldridge Bros., Mt. Auburn, Ill.
M. I. Baldridge, Illiopolis, Ill.
Baldridge Brick & Tile Co., Stonington, Ill.
Baldwyn (Miss.) Brick & Tile Co.
Bloch & Levi, Newcastle, La.
Boyne City (Mich.) Clay Products Co.
L. H. Cordes & Co., Watertown, Wis.
Darlington Brick Co., Society Hill, S. C.
Davenport Brick & Tile Co., Buffalo, Ia.
Fertile (Minn.) Brick & Tile Co.
Fort Dodge (Ia.) Brick & Tile Co.
Fort Dodge (Ia.) Clay Works.
H. P. Frisch, Mt. Pulaski, Ill.
Hankinson Brick Co., Augusta, Ga.
Harper Brick & Pottery Co., Seattle, Wash.
Sangerfield (N. Y.) Brick & Tile Co.
Improved Brick Co., Salt Lake City, Utah.
Jerome (Mich.) Brick & Tile Co.
Kanawha Brick Co., Charleston, W. Va.
Krager Turpentine Cup Co., Daisy, Tenn.
La Junta (Col.) Brick & Tile Co.
D. A. Layton, Marion, S. C.
Lower Brick Co., Sioux City, Ia.
Mason City (Ia.) Brick & Tile Co.
Mason City (Ia.) Clay Works.
Mason City (Ia.) Sewer Pipe Co.
Pollard Bros., Strathcona, Alta., N. W. T.
Ottumwa (Ia.) Brick & Construction Co.
Portsmouth (O.) Pressed Brick Co.
D. M. Potter, Fremont, O.
Reddick (Ill.) Brick & Tile Co.
Salveson & Dawson, Petersburg, Ill.
Scioto Fire Brick Co., Sciotoville, O.
Sioux City (Ia.) Brick & Tile Co.
W. H. Snell, Blue Mound, Ia.
Waterloo & Cedar Falls Brick Co., Cedar Falls, Ia.
H. Weil & Bros., Goldsboro, N. C.
Whittet Bros., Edgerton, Wis.



No. 57 Double Die Repress

No. 57 Double Die Repress

THIS design is one of great strength and durability, both of which are most essential features in a machine of this kind. The base, which is cast in one piece, contains bearings for all the shafts and is planned to receive the upright guides, which are of the most rigid pattern. The bearings are so located that they are not exposed to grit and dirt, and the gearing is of ample strength to assure proper service under all conditions. The feed mechanism is simple, positive and out of the way; moulds lined with tool steel and plungers faced with the same material; pressure frame gibbed to provide for wear, and adjustments for thickness easily and quickly made.

Attention is directed to the fact that each brick is pressed independently of the other, and one is not affected by the other, as is not the case in presses having springs on the end of the presser frame. In this press each of the bottom plungers is provided with a powerful spring, the tension of which may be adjusted for any degree of pressure it may be desired to apply. These springs also serve to move the brick in the mould while under pressure, and also as an excellent safety device to protect the press against breakage. The machine will press round-cornered brick, sharp cornered brick, paving blocks, sidewalk brick and any other ware capable of being fed and discharged by simple machinery.

Specifications

WEIGHT: 8,000 pounds.

LENGTH: Off-bearing table, 8 feet.

WIDTH: Over all 76 inches.
Over gears, 39 inches.
Over sills, 28 inches.
Between guides, 20 inches.

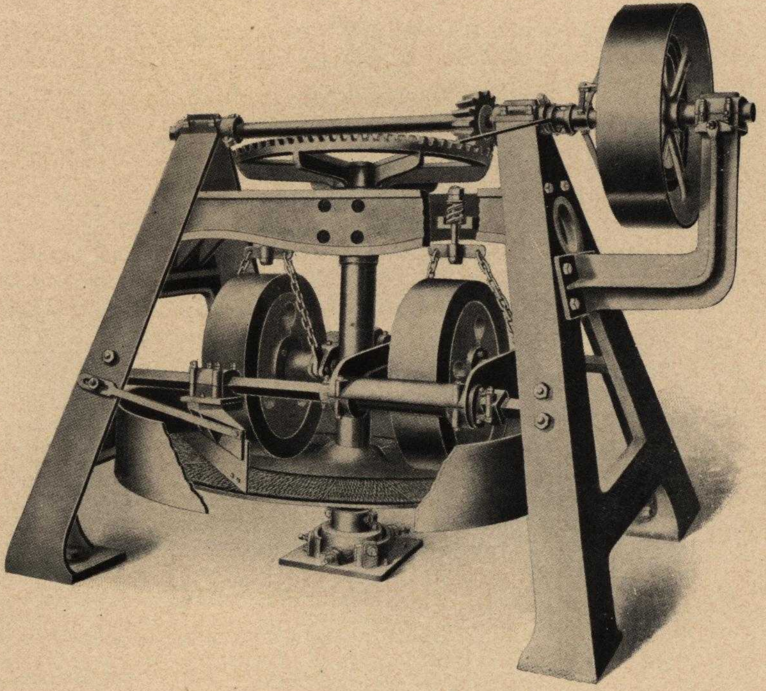
HEIGHT: Over all, 75 inches.

OUTBOARD BEARING: Pillow block.

DRIVING PULLEY: Friction-clutch, 30 in. diameter, 6 in. face.

SPEED OF DRIVING SHAFT: 125 revolutions per minute.

CAPACITY: 2,400 bricks per hour.



No. 46 Iron Frame Dry Pan

No. 46 Iron Frame Dry Pan

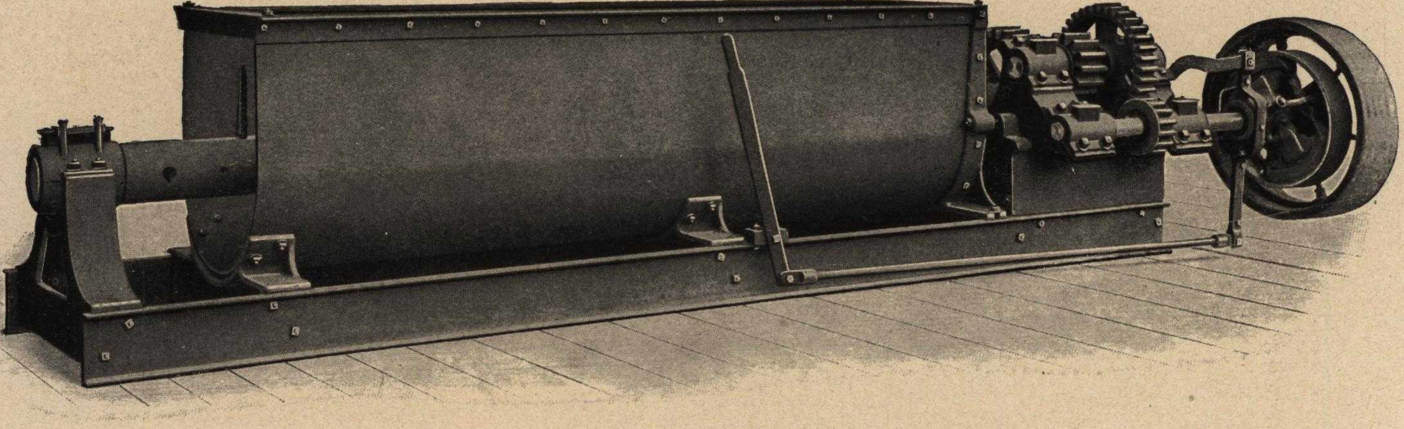
FOR grinding fire-clay, shale, grog, coal or other hard and dry substances, the dry-pan is universally considered the proper machine; but to fulfill its severe requirements it must be of massive design and rigid construction. With definite knowledge of what a good dry-pan should be, the one illustrated upon the opposite page is offered as a well designed, well built and thoroughly reliable piece of machinery with many features worthy of notice. The frame consists of two heavy inclined A's, connected by a substantial truss and the shafts which support the muller yokes; a method which gives a most rigid construction with proper distribution of metal to absorb the blows of the mullers. The step-bearing consists of hardened steel and phosphor-bronze plates running in contact, provided with convenient means for centering the shaft as well as a double wedge adjustment for height; lubrication being effected through the hollow vertical shaft. The pan construction embodies grinding plates which are turned and faced, and screen plates which are machined to the carrier arms, thus securing a perfectly flat bottom and a screening surface which runs true. The mullers are suspended and independent, each being secured in position by a heavy yoke, the object of this method being to prevent the tilting effect and uneven wear upon axles and bushings, which are always present where both mullers revolve upon the same shaft.

The chain hangers support the mullers so that they will clear the grinding plates when the machine is running empty, and the springs through which the frame attachment is made assist in the absorption of the shock and jar incident to the grinding of hard material. Mullers are supplied with removable tires and bushings. The friction-clutch pulley is of the 4-arm type, of great strength and durability; has liberal allowance of friction surface, and is easily operated.

Specifications

WEIGHT: 32,000 pounds.
LENGTH: Over all, 14 feet.
HEIGHT: Over all, 11 ft. 9 in. From floor to center of drive shaft, 9 ft. 9 in.

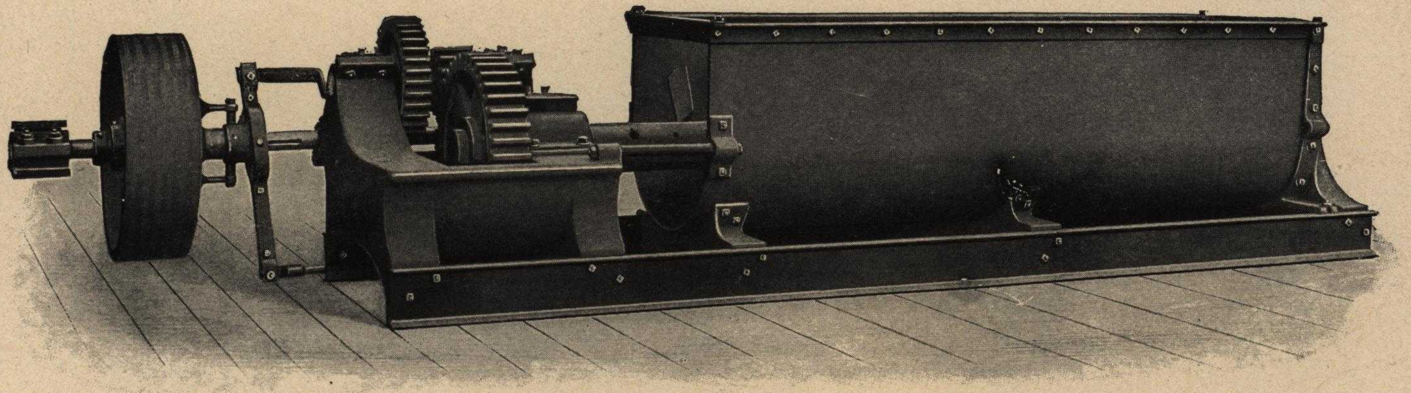
WIDTH: Over all, 9 feet.
MULLERS: 48 in. diameter, 10 in. face.
DRIVING PULLEY: Friction-clutch, 48 in. diameter, 12 in. face.
SPEED OF DRIVING SHAFT: 140 revolutions per minute.



No. 45 Pug Mill (Pushing)

Here are two 10 ft. Pug Mills which will surely make a favorable impression upon exacting buyers of clay working machines. They have the weight, the strength and the modern design which are necessary features of high grade patterns and their proportions are so liberal that they are also used as Granulators or Feeders with a wider margin of safety than is usually considered necessary. The two machines are built from the same patterns, the difference between them being wholly the manner in which they are assembled. The No. 45 (Pushing) discharges at the end opposite the driving pulley, while the No. 44 (Pulling) discharges between the end of the shell and the gear frame. One pattern can be converted into the other without additional parts and without disturbing the alignment of any of the bearings.

The gear frame is a one-piece casting of great strength, so designed that all gears come below the level of the top of the shell. The knives are of forged steel with round shanks mortised into the shaft and held in position by keys in such a manner that the pitch may be readily altered and any knife removed without disturbing the shaft or the balance of the knives. They are of a shape which resembles that of a butcher's cleaver; are about 1 in. thick at the back, gradually tapering to a sharp edge, and have a cutting effect upon the mass of clay which gives them a greater pugging capacity than can be obtained from a much greater number of knives of any other form. Thus a 10 ft. mill having knives of this kind is equal to a 12 ft. or 14 ft. mill of the older types. The thrust bearing is of the grooved Marine pattern, has ample bearing surface and is closed so that no grit or foreign substance can get into it. The shell is rolled from a single sheet of ¼ in. steel plate; and has its upper edges well protected with heavy steel angles. The front is entirely open, the outward passage of the clay and the con-

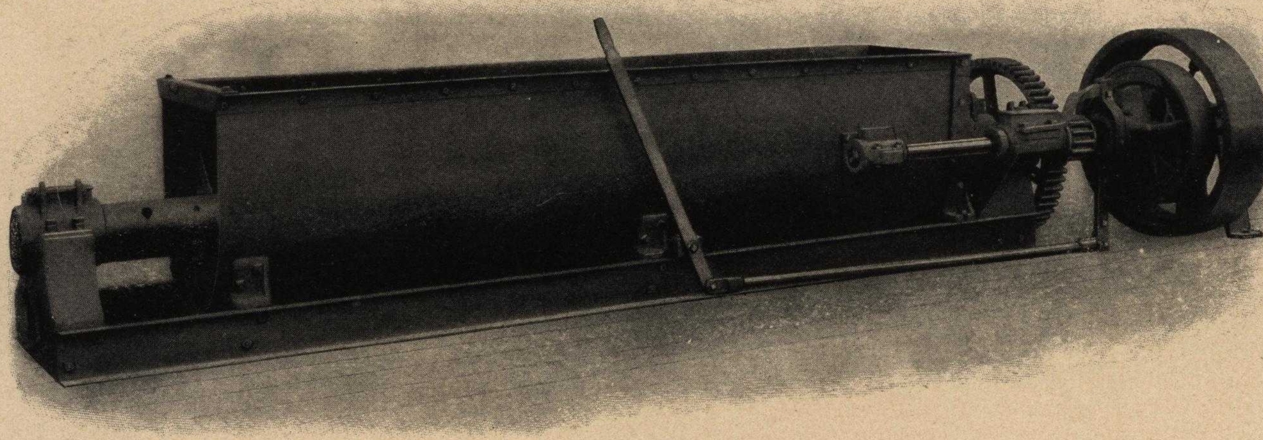


No. 44 Pug Mill (Pulling)

sequent amount of pugging being regulated by adjusting the pitch of the front knives. The machines are rigidly mounted upon heavy steel channels and are entirely self contained with the exception of the outboard bearing. Specifications of both mills are identical and are given in detail herewith. They show plainly the superiority of the design and construction.

Specifications of Both No. 44 and 45 Pug Mills

Weight: 8,000 pounds.
Length: Over all, 17 ft.
Width: Over all, 5 ft.
Height: Over all, 3 ft. 3 in.
Shafts: Pugging, cast iron, 7½ in. diameter.
  Intermediate, steel, 3½ in. diameter.
  Driving, steel, 3 in. diameter.
Gears: First reduction, 4¼ in. face, 1¾ in. pitch, ratio 2½ to 1.
  Second reduction, 6 in. face, 2¼ in. pitch, ratio 3 to 1.
Journals: 9 in. to 12 in. long.
Shell: 10 ft. long, 30 in. diameter, 33 in. deep.
Outboard Bearing: Pillow Block.
Knives: Forged steel, 34 in number.
Driving Pulley: Friction clutch, 34 in. diameter, 10 in. face.
Speed of Driving Shaft: 250 to 300 revolutions per minute.
Direction of Revolution: Over from left to right as observer faces clutch.
Capacity: Material for 7,500 bricks per hour.



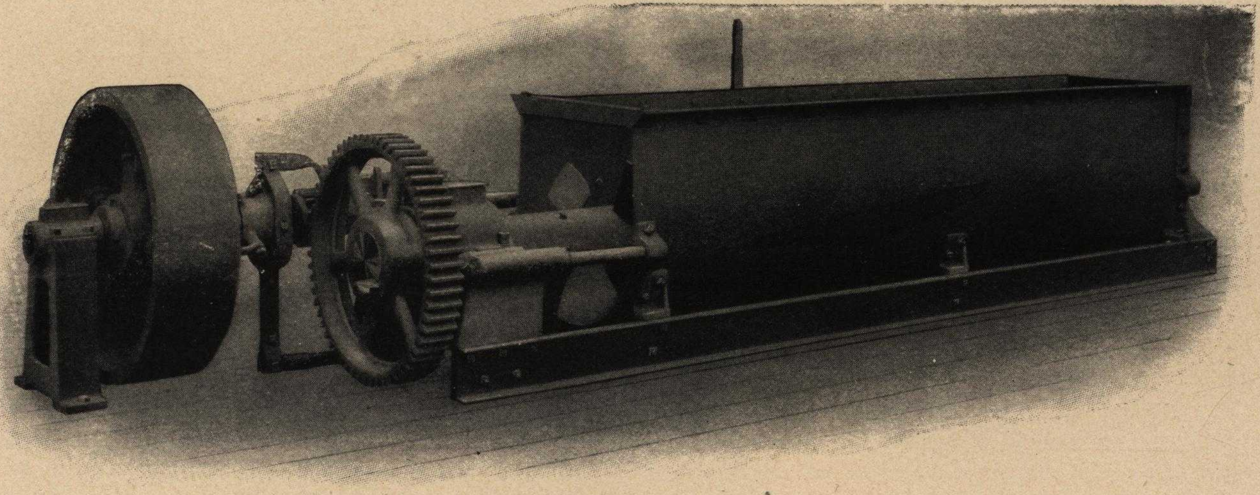
No. 34 Pug Mill (Pushing)

These two mills are of practically the same general design as the No. 44 and No. 45 previously described. They are of somewhat smaller capacity and have simple rather than compound gearing, but in other respects involve the same high-grade construction as the larger models.

The knives are of forged steel and have round shanks which are mortised into the pugging shaft and held in position with keys, thus making the pitch of each one independently adjustable. The entire top and one end of the mill is completely open and by properly adjusting the pitch of the knives the mill may be kept full of clay all the time with an even discharge irrespective of speed. In this manner it is easy to obtain better and more thorough pugging than would be possible with a mill in which the knives were rigidly fixed at a certain pitch even though the length were greater and the mechanical advantages of a short mill are so evident that it is unnecessary to mention them.

The thrust bearing is of the grooved Marine pattern which provides much more surface than can be obtained by collars of reasonable size and at the same time excludes grit and foreign substances much better than is possible with open collars located as such a bearing has to be on a pug mill.

Both of these models are made from the same patterns and one can be converted into the other without extra parts. The shell is rolled up from a single sheet of ¼ inch steel plate and with the exception of the outboard bearing the machines are entirely self-contained, all parts being mounted rigidly on heavy steel channels.

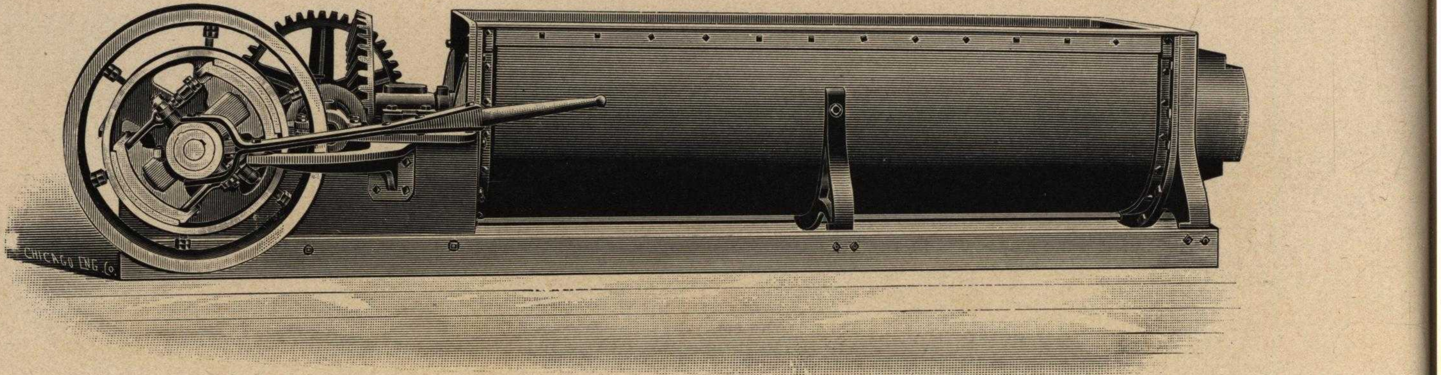


No. 35 Pug Mill (Pulling)

The specifications of both mills are identical and are given in much more detail than is customary with such machines. They are high grade machines and the buyer is welcome to an intimate acquaintance with their design and construction.

Specifications of Both No. 34 and 35 Pug Mills

WEIGHT: 5400 Pounds.
LENGTH: Over all, 16 ft.
WIDTH: Over all, 4 ft. 2 in.
HEIGHT: Over all, 35 in.
SHAFTS: Pugging, cast iron, 7½ in. diameter.
Driving, steel, 2½ in. diameter.
GEARS: 4½ in. face, 1½ in. pitch, ratio 4½ to 1.
JOURNALS: 8 to 12 in. long.
SHELL: 10 ft. long, 24 in. diameter, 29 in. deep.
OUTBOARD BEARING: Floor stand.
KNIVES: Forged steel, 40 in number.
DRIVING PULLEY: Friction Clutch, 34 in. diameter, 10 in. face.
SPEED OF DRIVING SHAFT: 150 to 200 revolutions per minute.
DIRECTION OF REVOLUTION: Over from right to left as observer faces clutch.
CAPACITY: Material for 4000 to 5000 bricks per hour.


CHICAGO ENG Co.

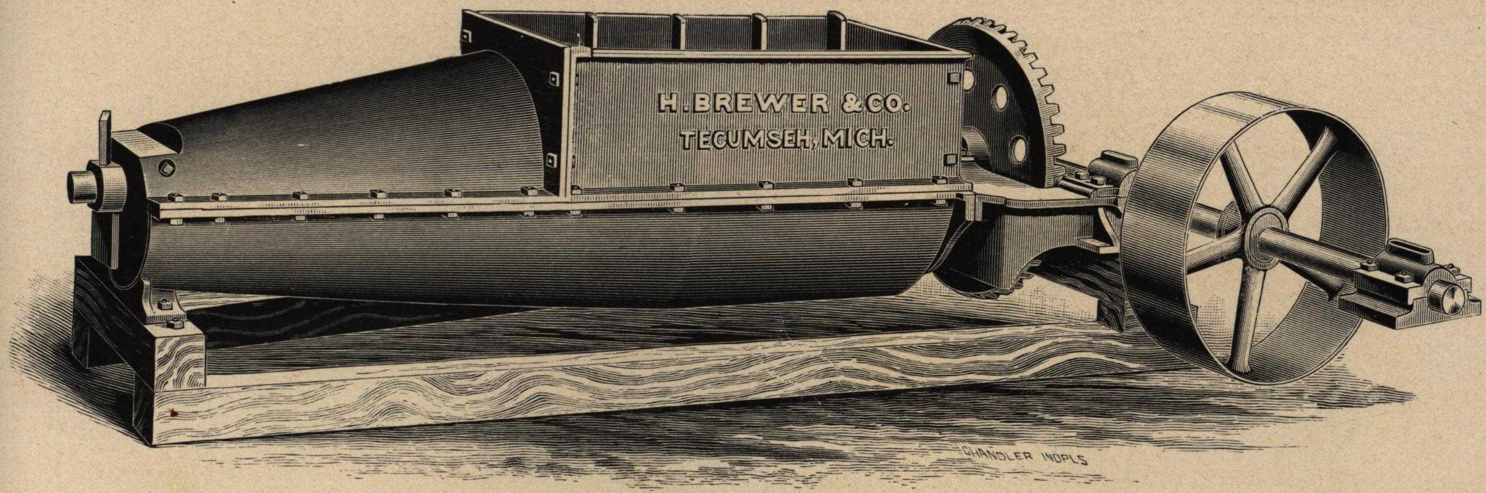
No. 55 Pug Mill

THIS mill is of the open top, open end, bevel geared class, heavy and substantial in design and construction. The gear frame is cast in one piece, the shell formed from a single sheet and the manner of mounting upon steel angles makes the machine entirely self contained.

The knives, which are made of charcoal iron thoroughly chilled are attached to the shaft by means of clamps so that their position may be readily changed, also allowing the removal of one without disturbing the others. The upper edges of the shell are re-enforced with steel angles securely bolted in place assuring rigidity and permanent shape.

Specifications

WEIGHT: 6,500 pounds.
LENGTH: Over all, 14 ft. Tub., 9 ft.
WIDTH: Over all, 9 ft. 5 in. Over steel angles, 3 ft. 9 in. Shell 2 ft. 6 in.
HEIGHT: Over all, 2 ft. 9 in.
SHAFTS: Driving, 2½ in. dia. Intermediate, 3 in. dia. Pugging, 4 in. square.
GEARS: First reduction, spur, 4¼ in. face, 1¾ in. pitch, ratio 3 to 1. Second reduction, bevel, 5 in. face, 2¼ in. pitch, ratio 3 to 1.
JOURNAL BOXES: 8 and 10 in. long.
SHELL: ¼ in. steel plate, in one piece.
DRIVING PULLEY: Friction clutch, 34 in. dia., 10 in. face.
SPEED: 125 to 175 revolutions per minute.
DIRECTION OF REVOLUTION: Either direction desired.
CAPACITY: Material for 5,000 to 7,500 bricks per hour.


H. BREWER & CO.
TECUMSEH, MICH.
CHANDLER INDPLS

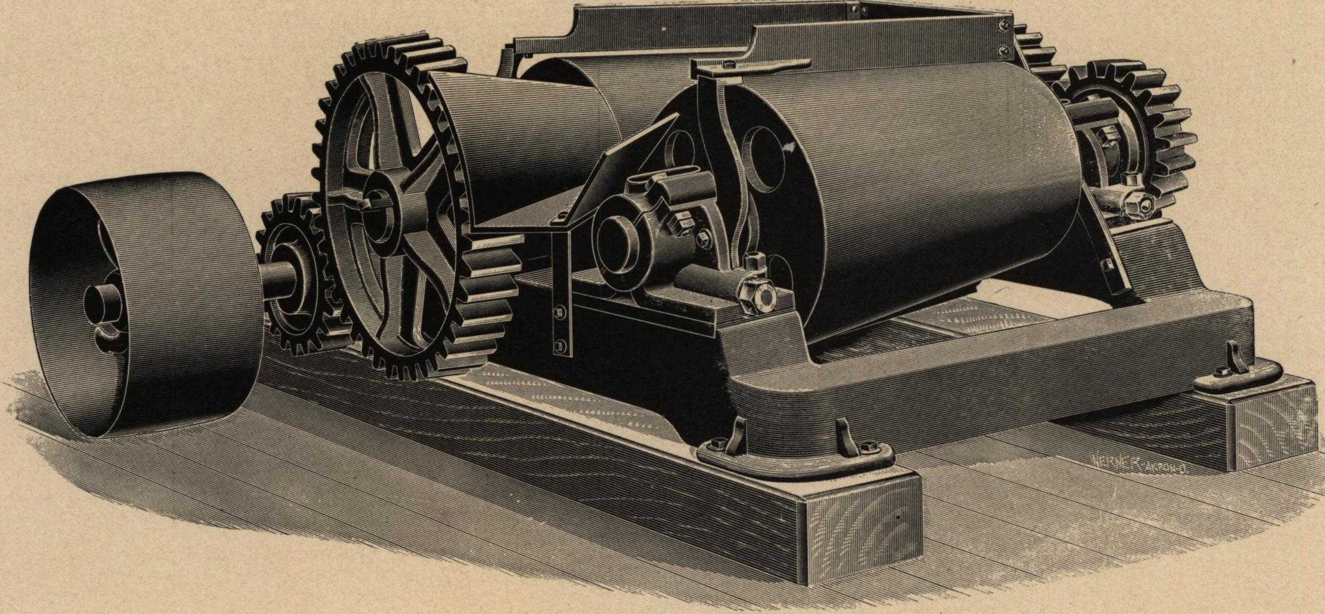
No. 1 Pug Mill

WHEN only a small short pug mill is required this pattern will be found to be an excellent selection. It is built with either spur or bevel gearing and with the top and front as shown in cut or entirely open throughout its length.

The standard construction is as shown above except that friction clutch pulley is always furnished in place of the plain pulley. The knives are made of chilled iron and are attached to the shaft with bolts in such a manner that the pitch can be readily changed or a knife removed without disturbing others. A well built low price mill.

Specifications

WEIGHT: 3,400 pounds.
LENGTH: Over all, 8 ft. Shell 6 ft. Open portion, 3 ft. Closed portion, 3 ft.
WIDTH: Over all, 9 ft. 5 in.
HEIGHT: Over all, 2 ft. 3 in.
SHAFTS: Driving, 2½ in. dia. Pugging 3½ in. square.
GEARS: Bevel 4½ in. face, 2 in. pitch, ratio .. to 1.
JOURNAL BOXES: 5 and 6 in. long.
OUTBOARD BEARING: Either pillow block or leg.
DRIVING PULLEY: Friction clutch, 48 in. dia., 8 in. face.
SPEED: 75 to 100 revolutions per minute.
DIRECTION OF REVOLUTION: Either direction desired.
CAPACITY: Material for 2,000 to 3,000 bricks per hour.


WERNER-AKRON.O.

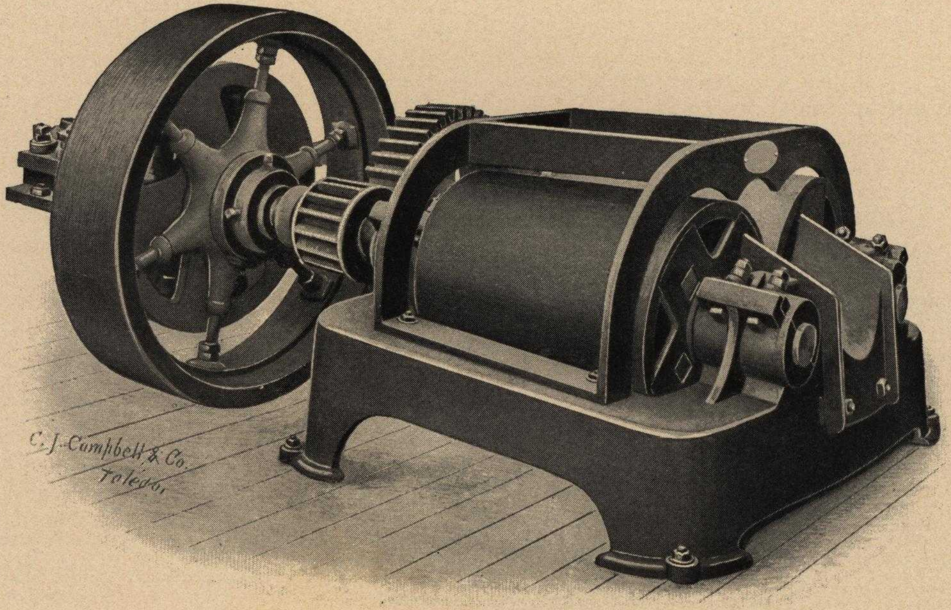
No. 2 Clay Crusher

No. 2 Clay Crusher

THE features of this machine are its great strength, heavy gearing and the conical shape of the rolls. The base is cast in one piece, and the crushing strain taken by 1¼-inch steel rods which also serve to adjust the distance between the rolls. The gearing is arranged so that one roll is driven at greater speed than the other, thereby more readily drawing the clay between them and grinding it rather than rolling it into sheets or flakes. The rolls are made of the best chilled iron, 32 inches long, 22 inches in diameter at one end, 18 inches at the other, and are so mounted in the frame that stones which are not readily passed through are carried to the large end and discharged through the chute. The inclination of the roll shafts one to the other permits the maintenance of the pinions at the proper depth of mesh, regardless of how far apart the rolls may be set, by moving the pinion in or out upon the shafts. Each roll is supplied with an adjusting scraper to remove any clay which may adhere to it. The standard is supplied with heavy back gear, but if preferred it will be furnished with driving pulley upon the roll shaft. The engraving shows plain driving pulley, but a suitable friction-clutch pulley is furnished.

Specifications

Weight: 5,885 pounds.
Length: 6 feet.
Width: 4 feet.
Height: 2 ft. 4 in.
Shafts: Driving, 3 in. diameter, steel.
    Roll, 4 in. diameter, steel.
Gears: 4½ in. face, 2¼ in. pitch.
Journal Boxes: 8 in. and 10 in. long.
Outboard Bearing: For driving shaft, pillow block pattern.
Driving Pulley: For standard machine, friction-clutch, 34 in. diameter, 10 in. face.
    When placed upon roll shaft, friction-clutch, 42 in. diameter, 10 in face.
Speed: For standard machine 200 to 250 revolutions per minute.
    When driven from roll shaft, 250 to 300 rev. per min.
Direction of Revolution: Over from right to left as shown in cut.
Capacity: 5,000 to 15,000 brick per hour.



No. 59 Conical Roll Clay Crusher

The No. 59 Conical Roll Clay Crusher

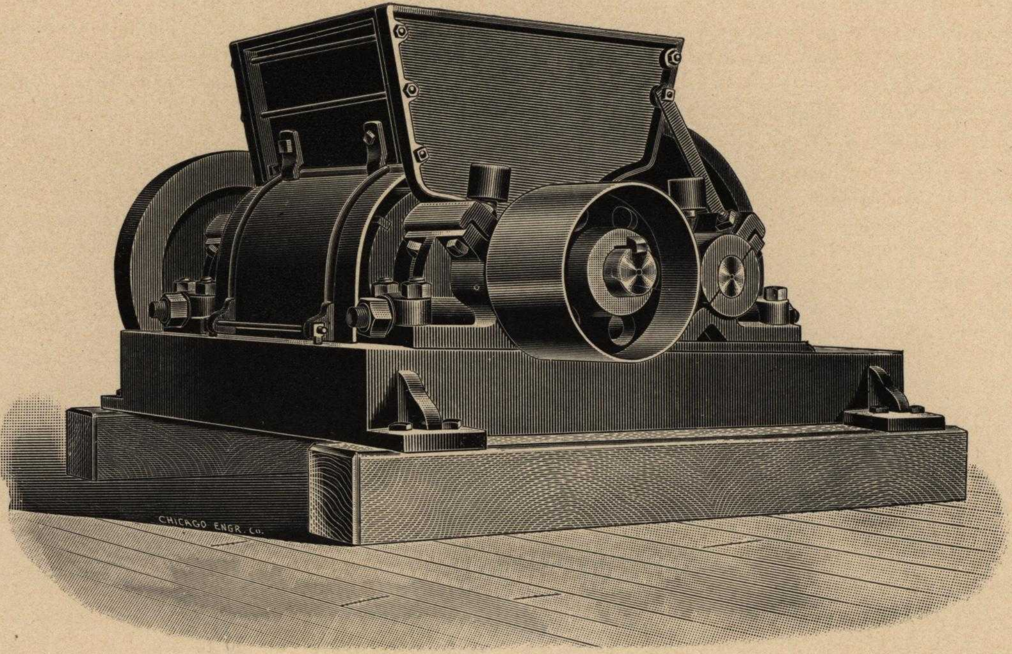
THE construction of this crusher involves six important details. First, the rolls are conical in shape, which causes the stones contained in the clay to travel toward the large end and finally out through the chute. Second, the rolls are provided with white iron shells, which, when worn, can be replaced with others without destroying either the shafts upon which they are mounted or the spiders which connect shells to shafts, as is the case with rolls of other patterns. Third, the rolls are driven at differential speeds, which gives them a grinding rather than a rolling effect upon the clay and which leaves the ground material in better condition for tempering than would otherwise be the case. Fourth, the frame and one pair of boxes are cast together in one piece, making the most rigid construction possible for such a machine. Fifth, the dividing lines of the journals are inclined against the pressure caused by the crushing of the material which is passing through the machine, thereby throwing the strain well into the boxes rather than to a point directly between boxes and caps as has been common practice in old patterns. Sixth, the scrapers which are provided to keep the rolls free from clay are made up into a one-piece casting and hung in such a manner that wear is easily taken up from above without the necessity of getting under the machine.

Particular attention is directed to the removable white iron shells with which the rolls of this crusher are supplied. White iron is a very hard material of the same structure throughout as the hard portion of a chilled casting, such as a plow share or a chilled crusher roll. The manufacture of a chilled roll is attended with very uncertain results, inasmuch as the same mixture of metal and the same mould will yield a casting thoroughly chilled in one case and not chilled at all in another. The white iron, however, always gives the same results under the same conditions and hardness and toughness of the casting are assured.

A clay crusher is a machine which has to stand the hardest kind of work under very unfavorable circumstances and is entitled to as much care in its design and construction as more complicated appliances, therefore, this particularly well built pattern is especially desirable.

Specifications

Weight: 3,000 pounds.
Length: Over all, 5 ft.
Width: Over all, 6 ft. 10 in.
Of Base: 3 ft. 3½ in.
Height: To top of hopper, 25½ in.
Rolls: 22 in. long, 17 in. diameter large end, 14 in. diameter small end. Removable shells of white-iron.
Shafts: 2⅞ in. diameter, steel.
Gears: 4½ in. face, 1½ in. pitch, ratio 2½ to 1.
Journal Boxes: 7 in. long.
Outboard: Pillow block.
Driving Pulley: Friction clutch, 34 in. dia., 8 in. face.
Speed of Driving Shaft: 250 to 300 revolutions per minute.
Capacity: Material for 2,500 to 4,500 bricks per hour.


CHICAGO ENGR. Co.

No. 53 Disintegrator

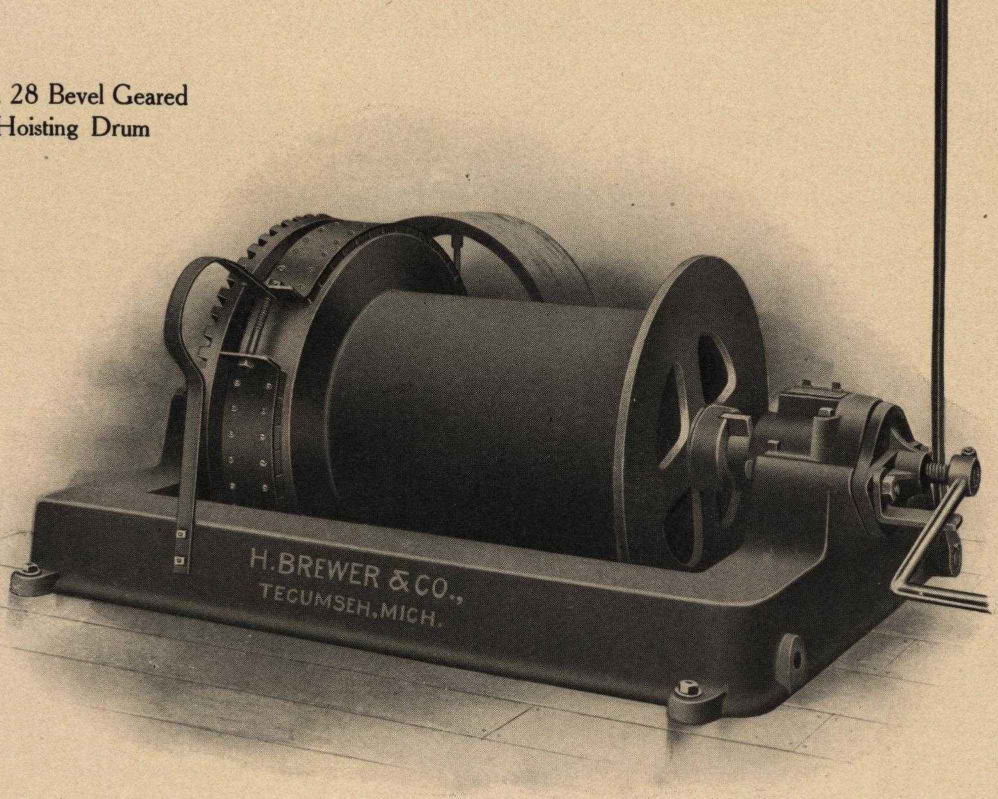
No. 53 Disintegrator

THIS is a machine for grinding or reducing those clays which come from the bank in large tough lumps or which carry with them stones or other foreign matter of similar character. It will handle such material in either a moist or dry condition, and all stones which are not pulverized are forcibly thrown out of the hopper. The machine consists of a substantial frame in which is journaled a large slow-running feed roll and a smaller rapidly revolving cutting roll which is provided with hard steel lateral bars projecting somewhat beyond the face of it. These rolls are run as close together as circumstances demand, but never touching one another, and the boxes in which they are journaled arranged with their dividing lines inclined so that the strain all comes upon the box instead of partly upon the caps and cap bolts, while two heavy rods take the pressure from the bolts which secure the boxes to the frame and at the same time serve as a means of adjusting the distance between the rolls. The large feed roll is kept free from an accumulation of clay by a scraper provided for the purpose, which can be easily adjusted to take up wear. Two belts are used for driving, one for each roll, and the high speed shaft is supplied with a heavy balance wheel.

Specifications

WEIGHT: 3,200 pounds.
LENGTH: 4 ft. 1 in.
WIDTH: 3 ft. 9 in.
HEIGHT: 2 ft. 10 in.
SHAFTS: 2⅞ in. diameter.
FEED ROLL: Chilled iron, 20 in. face, 24 in. diameter.
CUTTING ROLL: 20 in. face, 12 in. diameter.
CUTTING BARS: Tool steel, adjustable and removable.
JOURNAL BOXES: 9 in. long.
DRIVING PULLEYS: Feed Roll, 30 in. diameter, 6 in. face.
Cutting Roll, 12 in. diameter, 8 in. face.
SPEED: Feed Roll, 30 to 40 revolutions per minute.
Cutting Roll, 800 to 900 revolutions per minute.
CAPACITY: 3,500 to 5,000 bricks per hour.

No. 28 Bevel Geared
Hoisting Drum



No. 28 Bevel Geared Hoisting Drum

IT frequently occurs that the position to be occupied by the hoist relative to that of the clay bank and line-shaft is such that a bevel geared hoist is necessary, and to provide for such requirements the No. 28 is offered as a strictly high grade, heavy duty machine. It is of the same general pattern as the No. 27 illustrated and described upon the next following pages and differs from it only in the method of gearing.

The mechanical action of these hoists is as follows: The gear is rigidly attached to the drum shaft and has firmly bolted to it a friction ring of hard wood which is the shape of a frustum of a cone. The drum is loose upon the shaft and has in one end of it a depression or recess of the same shape as the friction ring referred to above. When it is desired to make the drum operative it is forced into contact with the friction ring by means of a heavy screw provided with a crank handle which passes through a large nut attached to the frame. Around the shaft, between the gear and the drum is a powerful spiral spring, which, when the screw is turned backward, disengages the drum from the gear, leaving the former stationary while the latter continues to revolve as before. The brake-band is lined with hard wood and is made of two pieces connected at one end with a long take-up bolt, at the other by a bell-crank mounted upon a rock-shaft to which is keyed the long vertical lever. The purpose of the brake is to control the speed of the empty cars down the incline and somtimes to hold loaded cars stationary at some point during their ascent.

Provisions are made for a drum ratchet and dog, to be operated by a separate lever, by means of which the drum may be held stationary without the brake. This attachment is special and subject to an extra charge.

The standard machines carried in stock are built upon left hand frames as shown in cut but special machines upon right hand frames can be built to order. These special machines have the driving pulley located upon the front left hand corner of the frame instead of the rear left hand corner as shown in cut.

Specifications

Drum: 20 in. diameter, 28 in. between flanges, cast in one piece.

Flanges: 30 in. diameter.

Gears: 4 in. face, 1½ in. pitch, ratio 4 to 1.

Drum Shaft: 3½ in. diameter.

Driving Shaft: 2½ in. diameter.

Bearings: Self-oiling.

Brake Band: 5 in. wide.

Frame: 64 in. long, 54 in. wide, cast in one piece.

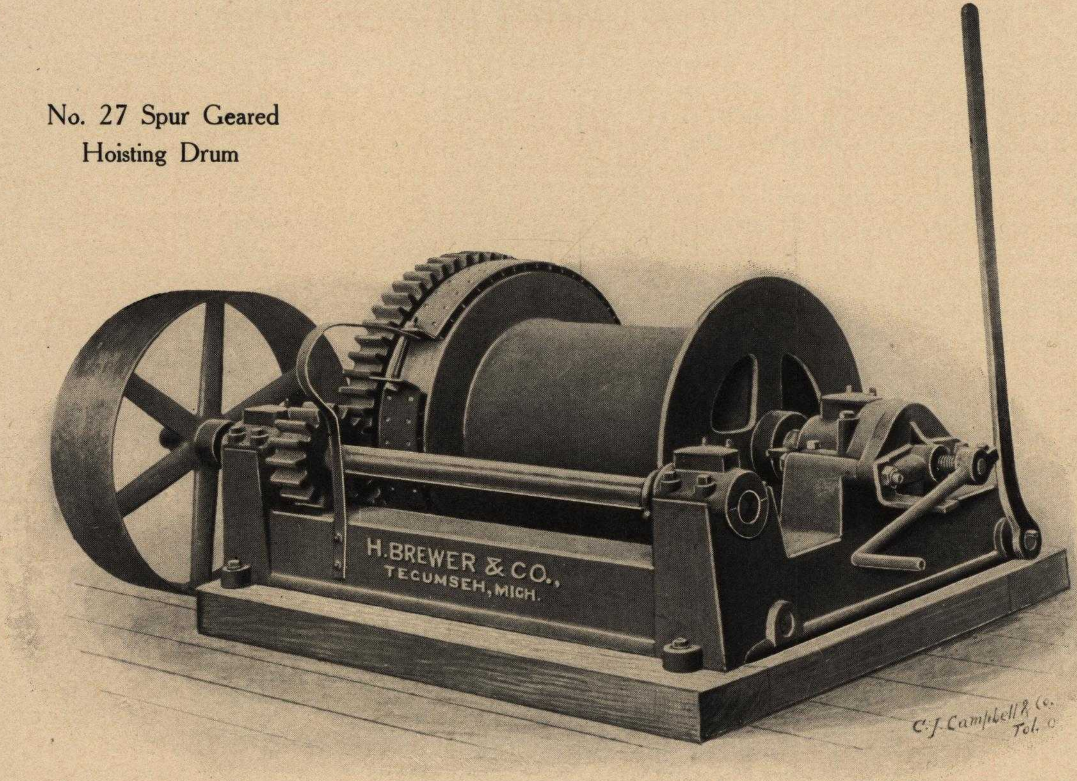
Brake Lever: May be placed on either side of drum crank.

Driving Pulley: 30 in. diameter, 10 in. face.

Speed: 250 to 300 revolutions per minute.

Weight: 3,000 pounds.

No. 27 Spur Geared
Hoisting Drum


H. BREWER & CO.,
TECUMSEH, MICH.
C. J. Campbell & Co.
Tol. O.

No. 27 Spur Geared Hoisting Drum

THIS is distinctly a high grade machine of most modern construction and under no circumstances would a person be warranted in a desire for anything larger, heavier or stronger for any ordinary brickyard purpose. It is a new pattern; built much better than is usual with such machines, and incorporates a number of features which make it more than ordinarily desirable and convenient to operate.

All bearings are self-oiling, providing ample lubrication at all times with only casual attention. The frame and drum are both one-piece castings, insuring rigidity and strength impossible to obtain where several members are machined and bolted together. The friction surface is greater and the brake band one inch wider than that of any other drum of its weight, providing for the maximum tractive power and making complete control of the empty cars down the incline easy and sure. The weight of the brake band is sustained when not operative by a goose-neck spring which not only avoids unnecessary wear upon the lining but permits the easy starting of the empty cars while yet on the level. The brake lever can be placed on either side of the drum crank as desired.

Provisions are made for a drum ratchet and dog, to be operated by a separate lever, by means of which the drum may be held stationary without the brake. This attachment is special and subject to an extra charge.

The standard machines carried in stock are built upon right hand frames as shown in cut, but special machines upon left hand frames can be built to order. These special machines have the driving pulley, shaft, and bearings located upon the rear side of the frame instead of the front side as shown in cut.

If a bevel geared hoist is required see the illustration and description of the No. 28 upon preceding pages where may also be found a description of the mechanical operation of both the No. 27 and No. 28 patterns which are alike except in the method of gearing.

Specifications

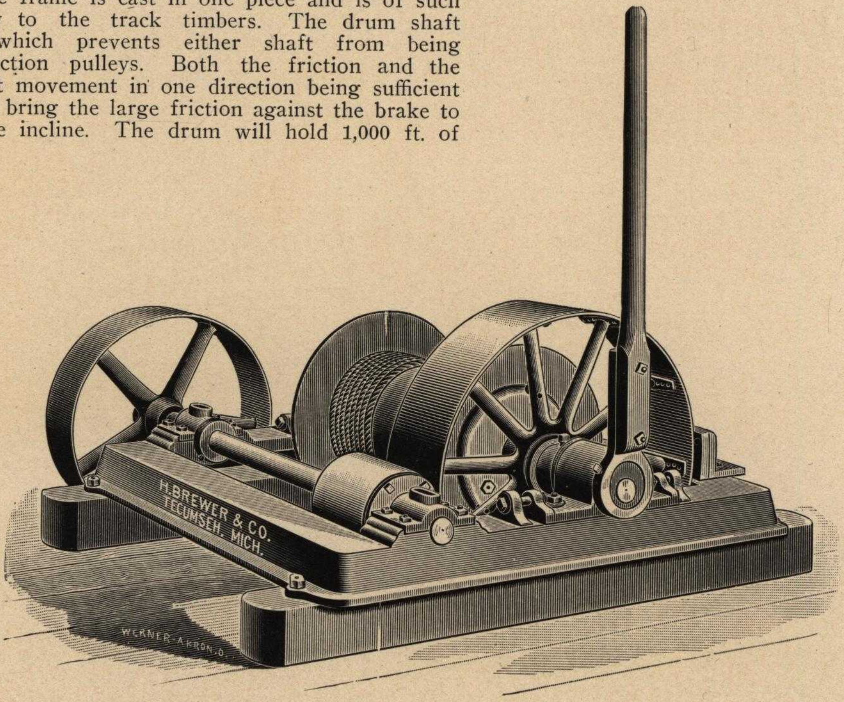
Drum: 20 in. diameter, 28 in. between flanges, cast in one piece.
Flanges: 30 in. diameter.
Gears: 4 in. face, 1¾ in. pitch, ratio 4 to 1.
Drum Shaft: 3½ in. diameter.
Driving Shaft: 2½ in. diameter.
Bearings: Self-oiling.
Brake Band: 5 in. wide.
Frame: 64 in. long, 54 in. wide, cast in one piece.
Brake Lever: May be placed on either side of drum crank.
Driving Pulley: 30 in. diameter, 10 in. face.
Speed: 250 to 300 revolutions per minute.
Weight: 3,000 pounds.

No. 1 Hoisting Drum

IN small plants where requirements are not severe and a light hoist is sufficient this pattern will be found very satisfactory. The frame is cast in one piece and is of such dimensions that it may be bolted directly to the track timbers. The drum shaft boxes have lug-bolts to resist the side strain which prevents either shaft from being crowded out of line by the pressure of the friction pulleys. Both the friction and the brake are controlled by the same lever, slight movement in one direction being sufficient to bring the frictions together; in the other to bring the large friction against the brake to control the speed of the empty cars down the incline. The drum will hold 1,000 ft. of ½ inch cable, other sizes in proportion.

Specifications

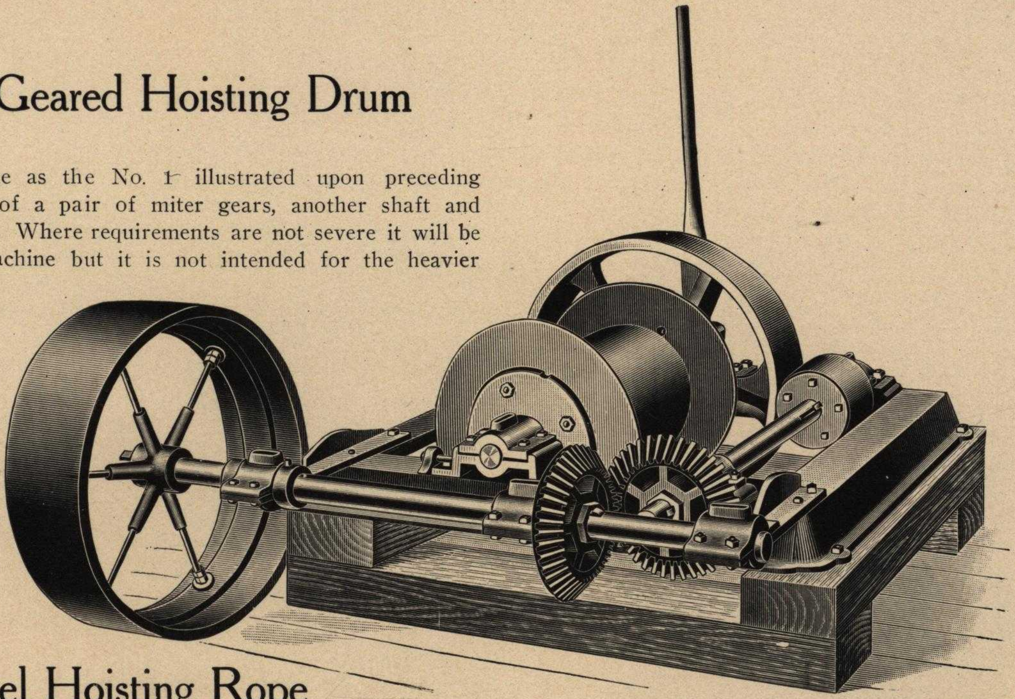
Weight: 1,400 pounds.
Length: 54 inches.
Width: 51 inches.
Shafts: Drum: 2¼ in. diameter.
Driving: 2¼ in. diameter.
Drum: 12 in. diameter, 22 in. long.
Flanges: 22 in. diameter.
Friction Pulleys: Iron, 30 in. diameter, 8 in. face.
Paper, 8 in. diameter, 8 in. face.
Journals: 5 in. long.
Driving Pulley: Plain, 30 in. diameter, 8 in. face.
Speed: 275 revolutions per minute.


H. BREWER & CO.
TECUMSEH, MICH.
WERNER-AKRON, O.

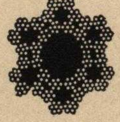
No. 2 Bevel Geared Hoisting Drum

THIS machine is the same as the No. 1 illustrated upon preceding page with the addition of a pair of miter gears, another shaft and suitable bearings for it. Where requirements are not severe it will be found a very satisfactory machine but it is not intended for the heavier class of work which the No. 28, shown elsewhere, is capable of doing.

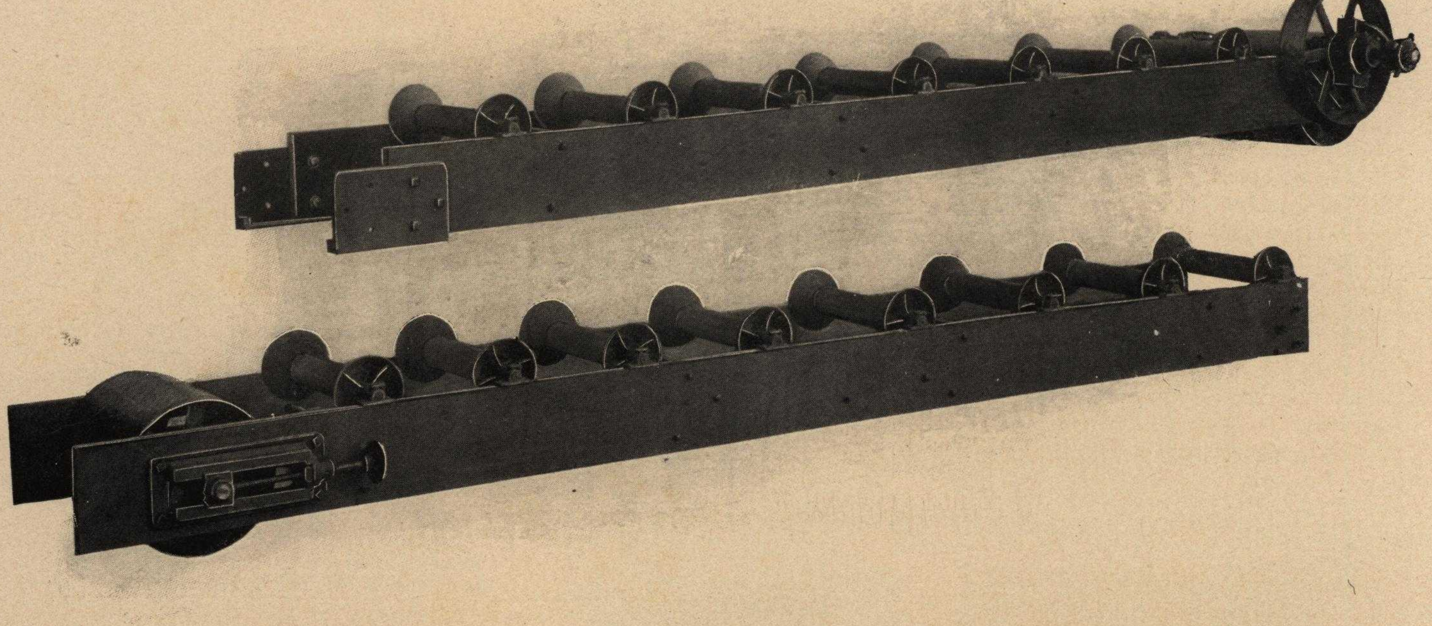
The specifications of the No. 1 Hoist apply generally to this machine as well but the following exceptions and additions should be noted. Weight 1,800 pounds, Gears 4½ in. face, 1½ in. pitch. Driving pulley can be placed on either end of shaft to suit circumstances.



Pliable Steel Hoisting Rope



Pliable Steel Hoisting Rope Six Strands of Nineteen Wires Each		
Diameter	Weight Per Foot	Working Load
½ In.	.35 Lbs.	2500 Lbs.
$\frac{9}{16}$ In.	.42 Lbs.	3500 Lbs.
⅝ In.	.67 Lbs.	4500 Lbs.



No. 78 Geared Conveyor

No. 78 Geared Conveyor

CONVEYORS of 24 inches width, irrespective of length, are built after the pattern illustrated upon the opposite page with concentrating rolls and without side boards or guards of any description. The belt is omitted from the illustration to give a better view of the rolls and general construction with the idea that in that way the design of the conveyor as a whole will be readily comprehended.

The concentrating rolls are mounted upon 1 inch shafts which run in bored bearings 2 inches long. The center or rigid portion is made of hardwood 4 inches in diameter and the bell shaped flanges, which are 9 inches in diameter with hubs 4 inches long, are bored to run freely upon the shafts. This method of construction not only allows the belt to assume a trough-like shape when loaded, thus preventing the clay from falling off the sides, but eliminates all unnecessary wear upon the belt and assures an even discharge of the material being handled over the head drums of the conveyor.

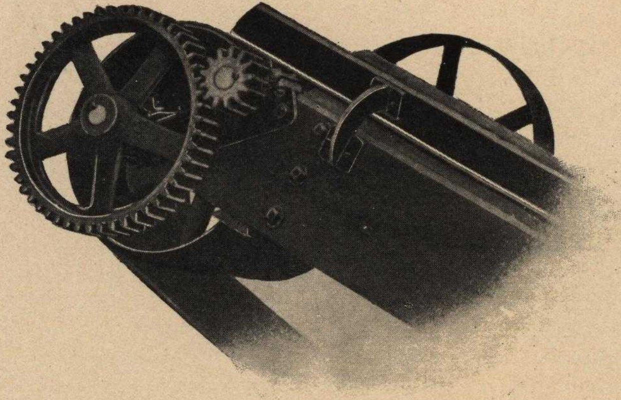
The frame is built in 15 foot sections with 2x12 Norway pine side rails joined every four feet with 2x12 girts and two 2x6 cross braces. The sections are joined by substantial cast iron splice plates securely bolted, flanged over the edges and notched into the side rails making a rigid and reliable connection.

The drums are both solid iron pulleys and are supplied with adjustable scrapers which prevent the accumulation of clay upon them. There is also provided a suspended belt scraper which removes and discharges outside the belt any clay which may adhere to the interior surface of it. The lower drum is journaled in take-up bearings having liberal adjustment to provide for stretch of the belt and the bearings of the upper drum are contained in a heavy gear frame having split babbitted boxes with ample opportunity for lubrication.

These conveyors are built of any length to suit the purchaser and may be set horizontally or upon any incline the pitch of which does not exceed 6 inches rise per foot of length.

Specifications

Weight: Head and foot 950 lbs. Add for each foot of length 35 lbs.
Belt: 24 inches wide, 4 ply stitched canvas.
Driving Pulley: Friction clutch, 24 inches diameter, 5 in. to 7 in face, according to length of conveyor.
Speed Driving Pulley: 80 to 100 revolutions per minute.
Gears: 2¾ in. face, 1⅛-in. pitch. Ratio 4 to 1.
Shafts: Driving 2 in. diameter.
Head 1¾ in. diameter.
Foot 1¾ in. diameter.
Drums: Head, 20 in. diameter crown face.
Foot, 18 in. diameter crown face.



No. 68. Head.

Specifications

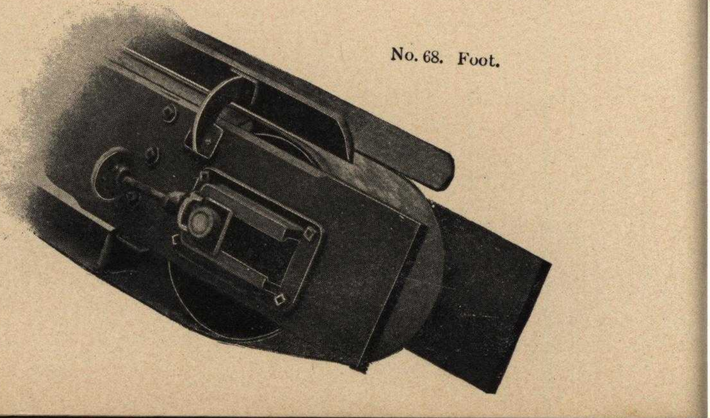
Weight: Head and foot 700 pounds. Add for each foot of length 26 pounds.
Belt: 18 inches wide, 4-ply, stitched canvas.
Driving Pulley: Friction clutch, 24 in. diameter, 4 in. face.
Speed Driving Pulley: 80 to 100 revolutions per minute.
Gears: 2¾ in. face, 1⅛ in. pitch. Ratio 4 to 1.
Shafts: Driving, 2 in. diameter.
Head, 1¾ in. diameter.
Foot, 1¾ in. diameter.
Drums: Head, 20 in. diameter, crown face.
Foot, 18 in. diameter, crown face.

No. 68 Geared Conveyor

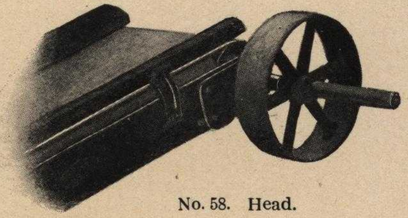
CONVEYORS of 18 inches width and between 20 and 50 feet length are built after the No. 68 pattern, the head and foot of which are illustrated by these engravings. If 18-inch conveyors of a length less than 20 feet are desired the No. 58 may be substituted when selecting machinery for small factories, but if greater quantities of material are to be handled this No. 68 pattern is a more desirable selection even for the shorter lengths.

The head or driving end of this conveyor is geared, and the driving pulley is of a substantial friction clutch pattern. The construction of the frame is very rigid; and the splices, which long conveyors may require, are heavy and reliable. Suitable side guards, scrapers and take-up boxes are also provided. For handling moist clay in quantities required for 4000 brick per hour, or less, is the purpose for which this No. 68 pattern is intended. It may be set either horizontally or on an incline, the pitch of which does not exceed 6 inches rise per foot of length.

No. 68. Foot.

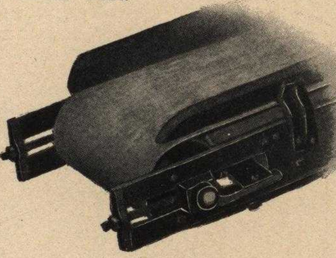


No. 58 Plain Conveyor



No. 58. Head.

No. 58. Foot.



CONVEYORS of 18 inches width, and less than 20 feet in length, are built after the pattern illustrated by the engravings herewith. Wider or longer conveyors are of different construction and are fully illustrated and described elsewhere. The No. 58 pattern is of simple and reliable construction and when length does not exceed the above specification is suitable for small factories where the amount of clay to be handled is not great. It is driven by a plain pulley upon the upper drum shaft without clutch or gearing; is provided with suitable guards throughout its length which not only prevent the clay from spilling over the sides but keep the belt centrally located upon the drums; has take-up boxes at the foot to allow for stretch of the belt, and is supplied with scrapers for removing any clay which may adhere to the inside of the belt or to the faces of the drums, with provisions for discharging this clay outside where it will cause no further trouble.

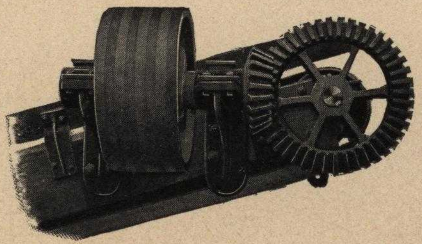
These conveyors are intended to be used for carrying moist clay. They will give good service when set horizontally or on an incline, the pitch of which does not exceed 6 inches rise per foot of length

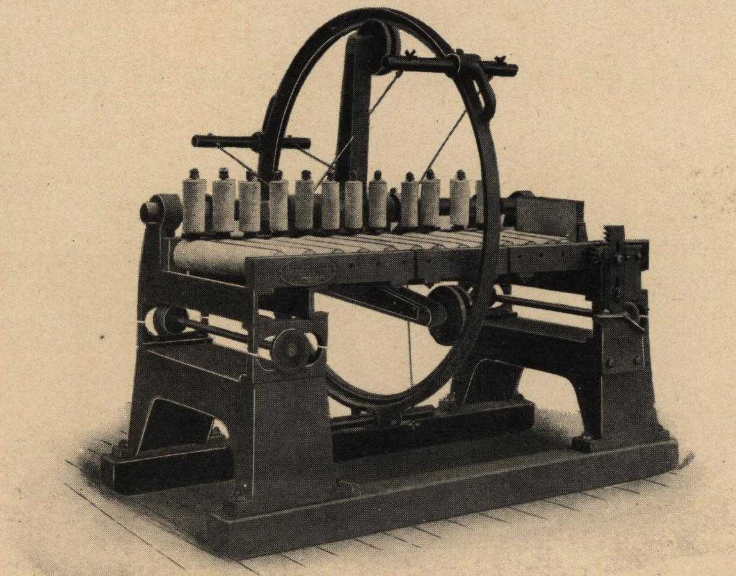
Specifications

Weight: Average per ft. 50 pounds.
Belt: 18 inches wide, 4-ply stitched canvas.
Driving Pulley: Plain, solid iron; 16 in. diameter, 4 in. face.
Speed Driving Pulley: 100 revolutions per minute.
Shafts: Head, 1¾ in. diameter. Foot, 1 5-16 in. diameter.
Drums: 8 in. diameter, crown face.

No. 43 Bevel Geared Driving Attachment

WHEN it is necessary to place the No. 58 Conveyor in a position parallel with the line shaft this bevel geared driving attachment serves as a convenient means of applying the necessary power. It is so designed that its position may be shifted to correspond with the angle at which the conveyor is set and will provide for horizontal or any reasonable incline of location. Driving pulley 14 inches diameter, 4 to 6 inches face, according to length. Weight 125 pounds. Speed of driving shaft 150 revolutions per minute.





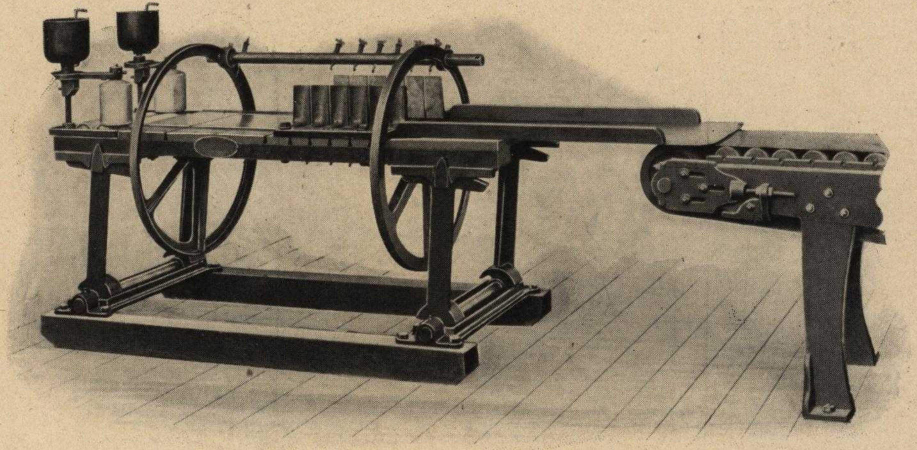
No. 33 Rotary Hollow Block Cutter

THIS machine is designed for cutting hollow blocks, fireproofing flue-lining, book-tile, bench-tile, etc., up to 12 x 12 inches in size and may be readily adapted to the requirements of those factories which produce special work such as radius blocks for stacks, grain elevators, and ware of a similar nature. It is thoroughly modern in its construction, is heavy enough to stand hard work and some abuse but is light enough to be readily moved. As shown by the engraving it is provided with an automatic end gate to measure the forward piece of ware of the cut but when desired a suitable dumping device for the larger sizes is furnished.

LENGTH: Over all, 49½ inches.
HEIGHT: Over all, 47 inches.
Height from bottom of skid to top of rolls, 24 inches.

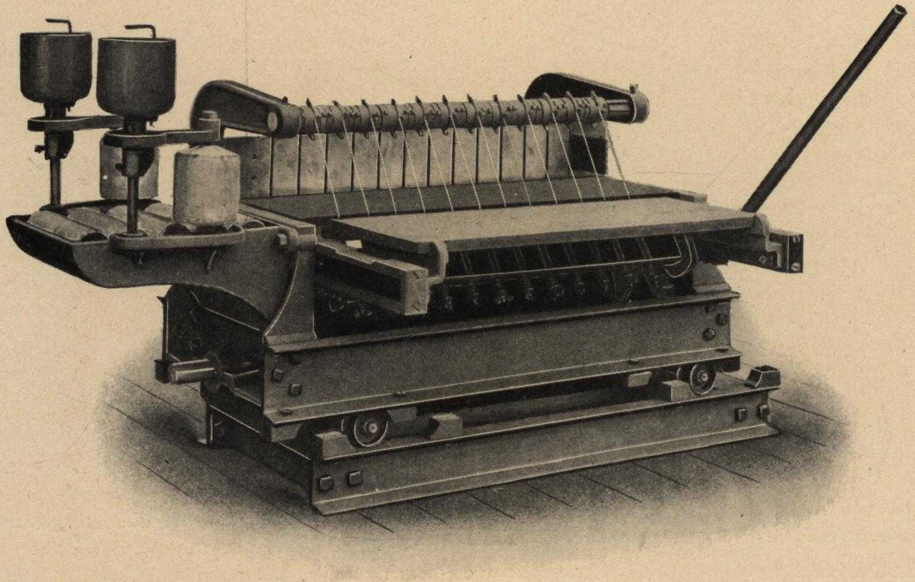
WIDTH: Over all, 43½ inches.
WEIGHT: 550 pounds.

No. 38 Hand Brick and Hollow Block Cutter



IN cases where a low-priced hand cutter is required to cut a number of different kinds of ware the No. 38 will be found a very satisfactory device. It is capable of handling a large output, and delivers upon an off-bearing belt from which the ware is removed in the same manner as from an automatic machine. It will cut two lengths of 12-inch block, three lengths of end-cut brick at a time, using both the backward and forward motion of the reel frame. If the output is limited, and it is necessary to have one man do both the cutting and the setting off, the off-bearing belt is not needed; but if the quantity of ware being made is large enough to keep the man at the cutter busy, or if the ware is to be put through a power repress, the off-bearing belt is used to great advantage. Suitable lubricating rolls for both sides and bottom of the column are provided, and arrangements are made whereby the waste oil is collected and used over again. Off-bearing table pulley 16 in. diameter, 4 in. face. Speed 20 to 40 revolutions per minute. Weight of cutter without off-bearing table, 300 pounds. Weight, 12 ft. off-bearing table 350 pounds.

No. 32 Board Delivery Brick Cutter



IN the operation of the board delivery brick cutter the wires are passed through the column of clay and a pallet board drawn under the severed portion of it by a movement of the hand-lever in one direction, while movement in the other direction delivers the pallet board with the bricks upon it to the position originally occupied by the empty board and replaces the wires ready for the succeeding cut. The board full of cut bricks is removed, another empty board substituted, and the process repeated.

The construction of this cutter is all iron and steel of sufficient weight and strength to insure durability and rapid operation. The wire holders are capable of quick and convenient manipulation and the wires are set obliquely in reference to the position of the clay column so that they have a shearing passage through it. The oil rolls are attached to the reciprocating portion of the machine and are constantly in contact with the column and by changing ends with the oil pan and operating lever the machine can be made either right-hand or left-hand without extra parts or the use of any special tools. Twelve brick of average thickness are cut at a time and under ordinary conditions the cutter is good for 5,000 brick per hour rate.

Weight, 885 pounds. Orders should specify thickness of cut desired.

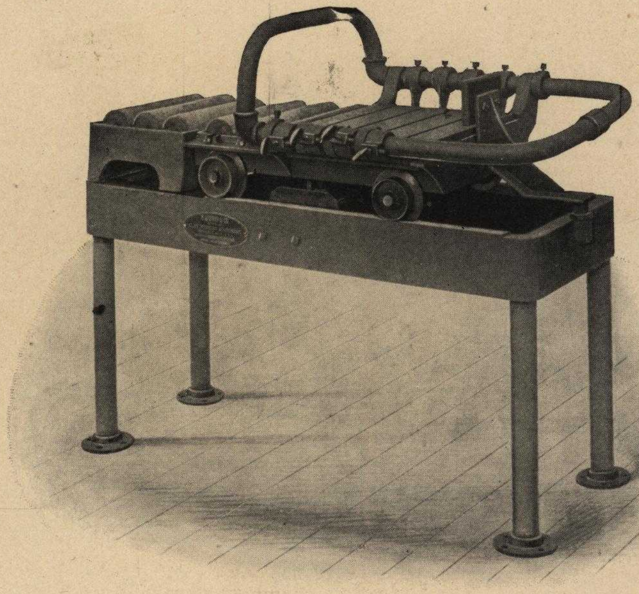
No. 47 Hand Brick Cutter

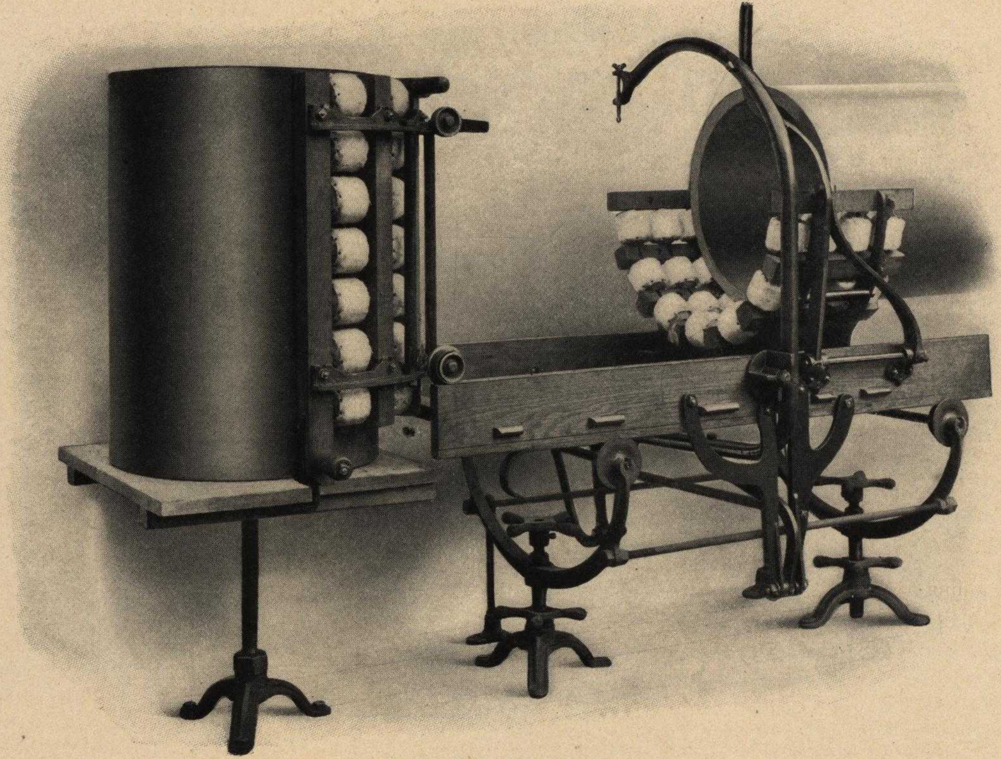
To supply the demand from small yards for a low priced hand cutter for side cut brick which is durable and rapid this little device has been designed with all the care usually exercised in the development of larger machines. It is built entirely of iron and steel; is heavy enough to be thoroughly substantial; light enough to be easily moved; is distinctly down cut in action; and the wires have a decided shearing movement as they pass through the clay. It cuts four brick at a time and is capable of being operated at the rate of 3,000 bricks per hour by a person with a little experience.

In cases where the output is so small that one person is expected to cut and set the brick upon the truck this machine will be found especially convenient for, after the wires have passed through the column the severed bricks remain in such a position that they are readily accessible and easy to handle.

Suitable lubricating rolls are provided as well as an automatic stop or gate to measure the last brick of the cut, but no side guides of any sort are used. The whole machine is self-contained and can be made either right hand or left hand in a few moments without the use of any special tools.

Weight complete as shown, 275 pounds. Orders should specify thickness of cut.





No. 29 Hand Tile Cutter

No. 29 and No. 39 Hand Tile Cutters

Highly Satisfactory Appliances for Cutting the Large Sizes of Drain Tile Produced Horizontally

IN the production of the larger sizes of drain-tile with horizontal delivery machines these cutters afford a most convenient, economical and rapid means of handling the ware. They are in extensive use and have given universal satisfaction throughout the territory where drain-tile are made. The two machines differ only in size. The No. 29 will cut 7, 8, 9, 10 and 12 inch tile, of single length, in plain roller troughs from which the ware is removed by formers described elsewhere, and 8, 9, 10, 12, 14 and 15 inch tile, of either single or double length in the roller dump troughs, by means of which the ware is deposited upon a pallet board as shown in the engraving upon the opposite page. The No. 39 will cut 10, 12, 14, 15, 16 and 18 inch tile of either single or double length in the roller dump troughs but is not recommended for the smaller sizes.

In the operation of these cutters with the roller dump troughs pallet boards are used at the ends of the troughs which not only serve to measure the tile before cutting, but as a means of handling it after it is cut. When the plain roller troughs are used the cutter is fitted with the No. 31 automatic gate which measures the tile before cutting but drops down out of the way when the cut is completed and the ware is to be removed.

To enable the purchaser to anticipate the requirements in the direction of pallet boards there is given herewith a sketch showing the shape, and a table of dimensions of all the different sizes. With this information in hand the operator may proceed to make up his pallet boards at his convenience.

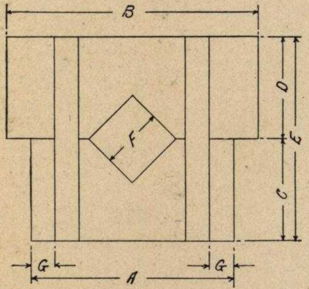
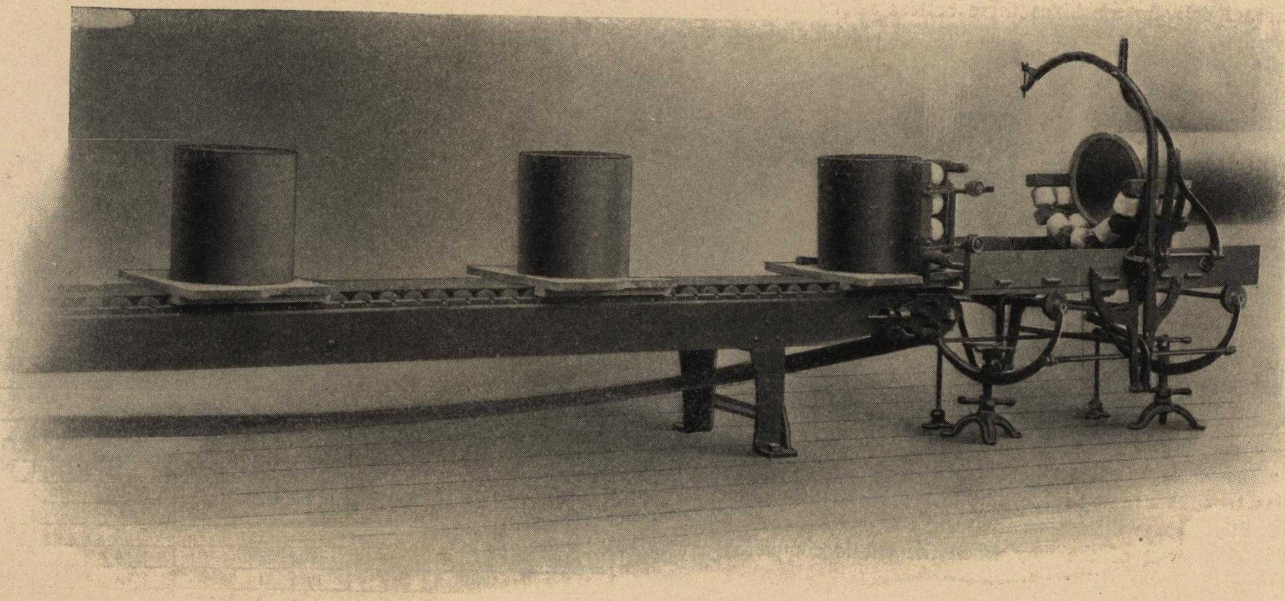


TABLE SHOWING DIMENSIONS OF PALLET BOARDS FOR NO. 29 AND NO. 39 TILE TROUGHS							
Size of of Tile	Dimensions in inches						
	A	B	C	D	E	F	G
8 in.	14¼	18¼	7⅛	7⅛	14¼	5	1½
9 in.	15¼	19¼	7⅝	7⅝	15¼	5	2
10 in.	16¾	20¾	8⅜	8⅜	16¾	5	2
12 in.	16¾	20¾	8⅜	8⅜	16¾	5	2
14 in.	19½	23½	9¾	9¾	19½	5	2
15 in.	20¾	24¾	10⅜	10⅜	20¾	5	2
16 in.	21¾	25¾	10⅞	10⅞	21¾	5	2
18 in.	23¾	27¾	11⅞	11⅞	23¾	5	2

Boards ⅞ inches thick — Cleats ⅞ inches thick, 2 inches wide

Orders for troughs should specify whether the tile are to be cut single or double length and the exact length in inches in either case. The standard single length is assumed to be 13½ inches and the standard double length 27 inches. It is intended to have in stock for prompt shipment standard single length plain roller troughs and standard



Method of Handling 10 in. and 12 in. Drain Tile, Single Length, when Produced in Large Quantities and Dried upon Cars double length roller dump troughs of the sizes mentioned above. Other sizes or lengths are made to order.

By substituting suitable flat or special shaped troughs these cutters are also used for cutting large sizes of hollow blocks, dumping the ware upon pallet boards in a similar manner to that described above. Information in regard to this kind of work will be furnished upon receipt of sketches or patterns showing the size and shape of the ware to be produced.

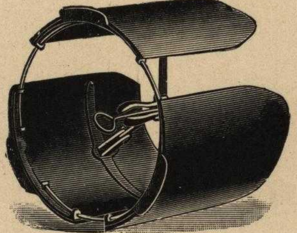
In cases where 10 and 12 inch tile are produced in large quantities and are to be dried upon cars it is customary to follow the idea illustrated by the accompanying engraving. The tile are cut single length in dumping troughs, and are deposited, pallet and all upon an off-bearing belt from which the tile only are removed by formers described elsewhere. The pallets are allowed to remain on the belt until they fall off the end of it in a pile from which they are returned to the cutter to be used again. This system is in use successfully by a number of large operators.

Table showing the number of rolls required for No. 29 and No. 39 Tile Troughs

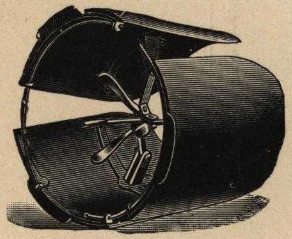
Size of Tile	Number rolls required: Plain roller troughs single length	Roller dump troughs single length	Roller dump troughs double length
6 in.	32		
7 "	32		
8 "	32	32	44
9 "	40	40	55
10 "	40	40	55
12 "	48	48	66
14 "		48	66
15 "		56	77
16 "		64	88
18 "		72	99

To make up a complete outfit of appliances to cut a certain variety of sizes a set of standards, a cutter, a trough for each size, and rolls enough to fill the largest trough are necessary. If the largest size is 15 inch or smaller the No. 29 cutter will answer the purpose but if the largest size is 16 inch or larger the No. 39 is necessary. The number of rolls required may be determined from the table herewith which shows the number necessary to fill each size and length of trough. Some operators prefer to have each trough supplied with a full set of rolls, thus avoiding the necessity of changing from one to the other but such practice is unnecessary and is optional with the user.

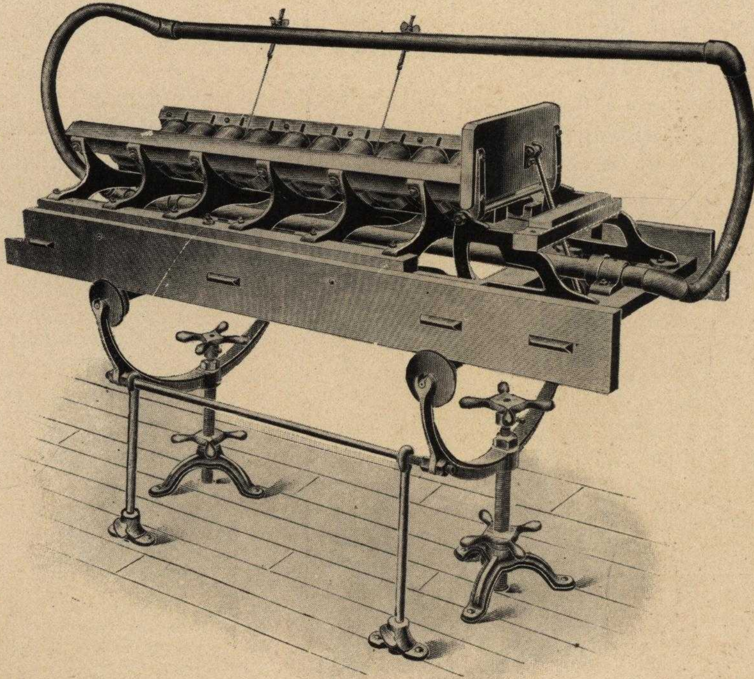
Tile Formers



For handling the larger sizes of tile, especially when cut in plain roller troughs without the dumping attachment, these clamps or formers are used to considerable advantage. The figure at the right shows the former contracted ready for insertion into the tile, and at the left is shown the position of the leaves after the handles have been grasped to move the ware. It is hardly possible to handle double length tile with these clamps, but single length sizes up to 12-inch may be easily transferred from trough to truck or car. They are furnished for the 8, 9, 10 and 12-inch sizes.



No. 40 Hand Tile Cutter



WHEN the smaller sizes of drain tile are produced in limited quantities and an automatic cutter is not required this simple hand cutter will be found a most satisfactory device. It cuts all sizes from 3 inch to 6 inch, inclusive, to any desired length between 13 and 14 inches and is both rapid and accurate.

The trough of this cutter is supplied with a separate set of 22 rolls for each size of tile to be cut. These rolls are flannel covered and are shaped to conform with the size of the tile so that a perfect support for the column is maintained. This feature is especially desirable when working tender clays or material which has to be tempered softer than usual.

Two tile are cut off at a time and both backward and forward movements of the wire frame are used. The length of the end tile is determined by the stop or gate which is automatically lowered when the cut is completed to facilitate the removal of the ware after it is severed.

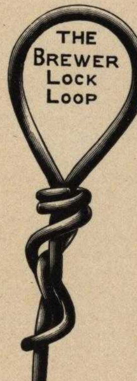
Weight without standards 260 pounds. Weight of standards 110 pounds. Length over all 4 ft. 6 in. Orders should specify exact length of cut desired.

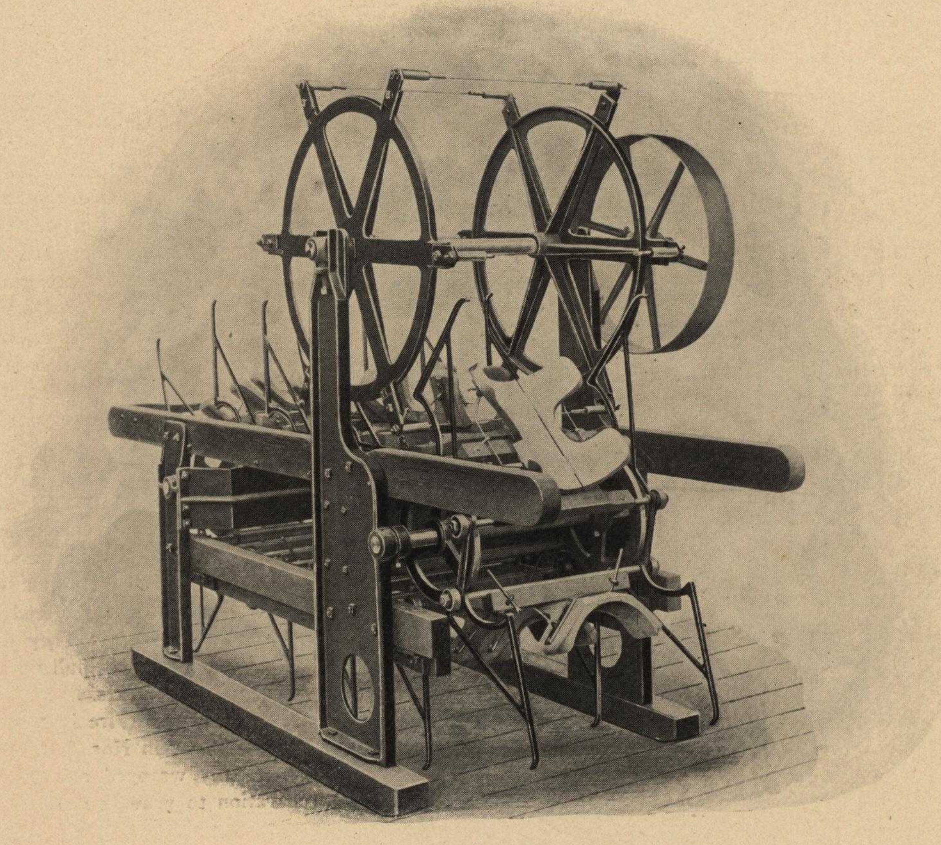
Cutting Wire

BREWER Brand Red Label Cutting Wire is selected for quality from the best hard drawn steel wires produced in the United States and foreign countries. Each lot is carefully tested for tensile strength, closely examined to determine uniformity of quality and if not up to prescribed standard is rejected. It is not offered as a cheap wire but is sold as a good wire at a fair price with a guarantee of satisfaction, and every coil which does not prove satisfactory in every respect will be replaced with another without charge.

Made-up cutting wires with Brewer Lock Loop can be furnished promptly in any length and of any of the sizes specified below. They are twisted by automatic machinery and are stronger and better than can be made by hand. They do not break in the loop and do not pull up tight around the wire holder hooks.

Brewer Brand Wire in 1 pound coils is carried in stock in Nos. 8, 9, 10, 12, 14 and 15; carefully wrapped and covered with a preparation to prevent rusting.





No. 70 Automatic Tile Cutter

No. 70 Automatic Tile Cutter

EXCEPT in cases where the output of the tile machine is very small an automatic tile cutter may be used to great advantage, and to supply the demands of the market for such a machine this exceptionally simple and efficient device is offered. The column of tile to be cut issues upon a series of troughs, joined together in such a manner that they make a flexible endless carrier, having arms disposed at regular intervals which serve as guides for the cutting wires as they pass through the column. These wires are strung across the arms of a reel, and the reel is driven by a slip-belt, the tension of which is adjusted by means of a hand tightener so that the guides of the reel arms are just kept in contact with the guides on the troughs. This brings about the very desirable condition in which the cutter is being governed by the issuing column of tile rather than being driven by it, as is the case in machines of similar appearance and other manufacture.

Drain tile from the 3-inch to 8-inch sizes inclusive are successfully cut by this machine, better and of more uniform length than can be done by hand. It does not upset, indent or pull apart the green ware; and has a capacity limited only by the number of tile which can be taken away from it.

By the substitution of special carriers the smaller sizes of tile which are made in double stream upon some machines can also be successfully cut as well as some of the smaller sizes of hollow blocks.

This machine can be built to cut any length of tile between 13 and 14 inches, or for double length, 26 to 28 inches, but 13¼ and 13½ inches are called standard lengths. Machines to cut these standard lengths are carried in stock for prompt shipment; for other lengths they are built to order.

Specifications

WEIGHT: 1150 pounds.
LENGTH: Over all, 8 feet.
HEIGHT: Over all, 5 ft. 5 in.
DRIVING PULLEY: 24 in. diameter, 4 in. face.

References

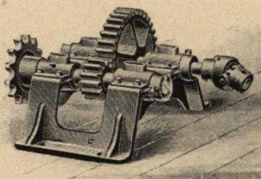
A Partial List of Users of Brewer No. 70 Automatic Tile Cutters

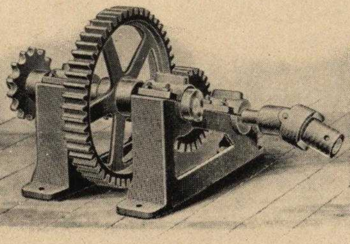
I. C. Adams, Wellman, Ia.
American Brick & Tile Co., Mason City, Ia.
Batavia (Ia.) Brick & Tile Co.
Brick & Drain Tile Co., Grand Blanc, Mich.
Brunswick (Mo.) Brick & Tile Co.
Brubaker & Kreider, Perrysburg, Ind.
Bingham Lake (Minn.) Brick & Tile Co.
Brown Bros., Crawfordsville, Ia.
Creighton (Mo.) Clay Co.
C. H. Comstock, Ashkum, Ill.
Paul O. Cook, Clarinda, Ia.
Fairfield (Ia.) Brick & Tile Co.
Fertile (Minn.) Brick & Tile Co.
Geo. French, Polo, Ill.
Gladbrook (Ia.) Pressed Brick Co.
Harvey (Ia.) Brick & Tile Co.
F. W. Heidenreich, Hedrick, Ia.
Joliet Mound Drain Tile Co., Joliet, Ill.
Kellogg (Ia.) Brick & Tile Co.
Keswick (Ia.) Brick & Tile Co.
S. K. Leacox, Keota, Iowa.
H. Lambert & Son, Beaverville, Ill.
Liscomb (Ia.) Brick & Tile Co.
C. A. Marshall, Jr., Cresco, Ia.
J. A. Mehring & Co., Napoleon, Ohio.
Mamer Bros., Campus, Ill.
L. H. Martin, Dwight, Ill.
Martin & Von Oven, Naperville, Ill.
Martin & Younkin, New Sharon, Ia.
Dugald McGibbon, Shedden, Ont., Can.
B. F. Neff, Bryan, O.
G. W. Oakes, Columbus Jct., Ia.
Geo. H. Orcutt, Monroe, Ia.
Pella (Ia.) Drain Tile Co.
L. B. Pierce, Winfield, Ia.
D. M. Potter, Fremont, O.
Jno. P. Rabe, Homewood, Ill.
J. D. Rumsey, Stryker, Ohio.
H. L. Swift, Riverside, Ia.
W. E. Supernois, Packwood, Ia.
Frank Sharp, Linden, Mich.
W. H. H. Smith & Sons, St. Louis, Mich.
F. E. Swift, Ottawa, Ill.
Wm. Telford, Southwold Station, Ont., Can.
Tiffin (Ia.) Tile Co.
Tramp Bros., Creston, Ia.
L. E. Tramp & Tramp, Audubon, Ia.
Robt. Unzicker, Peru, Ill.
Whittet Bros., Edgerton, Wis.
J. W. Wild, Gilman, Ill.

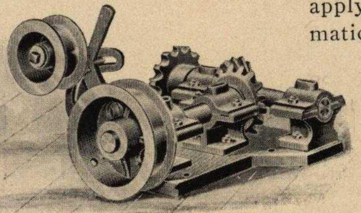
Driving Attachments

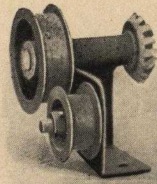
To provide a convenient means of applying power to the No. 70 Automatic Tile Cutter and similar machines a suitable driving attachment from the collection shown herewith is furnished. See table for specifications.

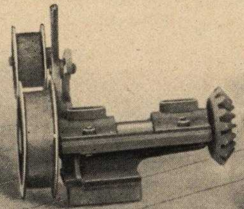
Driv. Att. No.	For Cutter No.	Weight
107	61	140 Lbs.
108	65	290 "
109	70	220 "
113	70	95 "
114	70	85 "
115	70	75 "
116	70	225 "

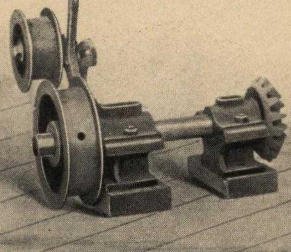

No. 107

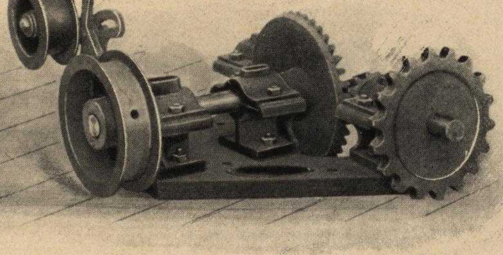

No. 108


No. 109


No. 115


No. 113


No. 114


No. 116

The Power Required to Drive a Clay Working Machine

FROM the specifications of all machines illustrated and described in this catalog the amount of power required to drive has been purposely omitted owing to the fact that it is impossible for anyone to give such information accurately or even nearly enough to be of any practical value. The only safe statement would be one giving the maximum under extreme conditions, and such figures would not only be misleading to the prospective purchaser, but unfair to the manufacturer.

Take, for instance, a combined brick and tile machine such as the No. 10A or the No. 9B, and it is plain that more power will be required to make some kinds of ware than others; also that more power will be required to make a certain amount of some particular kind of ware from a clay of one character than from one of different character.

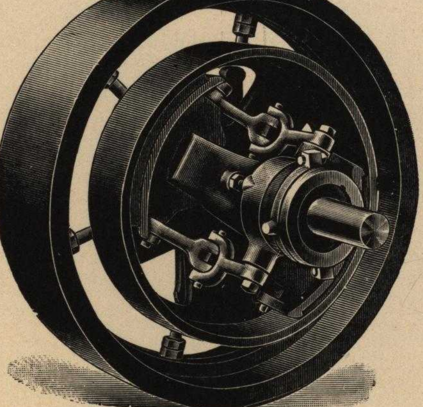
For another example, take a clay crusher, and it will be readily understood that the closer the rolls are set together the more power will be required to drive the machine; also the larger and tougher the lumps of clay, and the more frequent the stones, the harder the machine will drive. In the use of pug-mills similar circumstances are present; and the pitch of the knives, the temper to which the clay is being brought, and the amount of clay in the mill at one time, all govern the necessary power to operate.

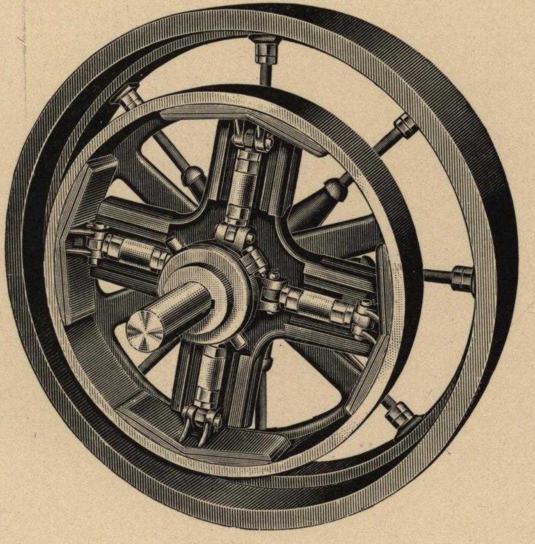
There is, however, a method by which the power requirements of any machine or collection of machines may be safely estimated, and if a competent mechanical engineer was to be consulted in regard to the matter he would at once make his calculations by taking as a basis the diameter, face and speed of the driving pulleys, for it goes without saying that machinery manufacturers provide for each machine a pulley capable of transmitting the maximum amount of power required to drive it under any reasonable conditions that may arise. It is not the purpose here to confront the brick maker with a confusion of figures, or to recommend for his use any complicated mathematical formula; but a simple "rule of thumb" will be given for determining the amount of power which any pulley of known diameter, face and speed will transmit.

Multiply the circumference of the driving pulley in feet by the number of revolutions it makes per minute; multiply the product thus arising by the width of the belt in inches; then divide this last product by 700 and the result will be the horse-power the pulley will safely transmit. It should be remembered, however, that this

Friction Clutch Pulleys

THE immediate and independent control of all machines in the plant by means of friction-clutch pulleys brings about a condition of safety, both of life and property, which no operator can afford to be without. This condition is brought about most readily by the use of friction-clutch pulleys wherever possible. For medium and light duty the Type B, 2-arm pattern, is recommended, and for heavy work the Type C, 4-arm pattern, is supplied.





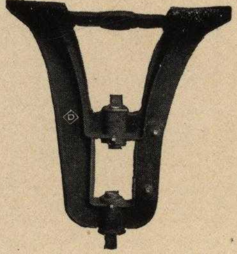
The Type C clutch is distinctly a high-grade article made according to the very best shop practice at the present time from designs especially prepared for clay-working machinery purposes. It is powerful, yet easy to operate and easily adjusted to compensate for wear. All parts interchangeable and duplicates to be procured at nominal prices.

Transmission Appliances

THIS line of goods, on account of its great variety, is only partially illustrated, but everything necessary for the transmission of power in a clay-working establishment, large or small, is furnished. The line includes leather, rubber and canvas belting, shafting, hangers of all kinds, pulleys, collars, couplings, tighteners, clutches, sprockets, sprocket chain, etc., etc., all of the most modern and efficient patterns and every article guaranteed to be first-class in every respect.

The opportunity to submit estimates upon power transmission appliances is solicited, and the services of a competent experienced engineer is offered gratis to those who are about to install a new outfit of machinery or remodel an old plant. It is very frequently the case that the driving of at least some machines in the plant is done at a great disadvantage and loss of power on account of improper arrangements of line shafts, pulleys and belts, and with prices as low as can be obtained from the largest manufacturers in the country it is well to have the machinery builder not only to recommend the driving arrangement but furnish the necessary appliances which he knows to be suitable to the requirements.

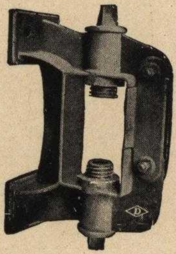
Adjustable Ball and Socket Drop Hanger



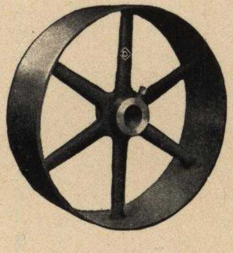
These hangers are neat in design and of great strength. They are carefully babbitted, reamed and ends faced for collars. They are made for shafts of all diameters from 1 3-16 in. to 3 5-16 in., with drops from 8 in. to 36 in. Either the standard wick-oiling, capillary-oiling or chain-oiling bearing is furnished, as desired.

Adjustable Ball and Socket Post Hanger

The frames of these hangers are designed along the same general lines and principles as the drop hanger, and embody great strength, neat appearance and wide adjustment. They are furnished for all sizes of shaft from 15-16 in. to 3 15-16 in., with standard, wick-oiling, capillary-oiling or chain-oiling bearings, as desired.



Plain Solid Iron Pulley

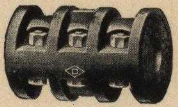


These pulleys can be furnished in either single or double belt weights from 6 to 54 inches in diameter and from 3 to 16 inches face. They are machine moulded, properly turned, bored and balanced.

Rigid Pillow Block

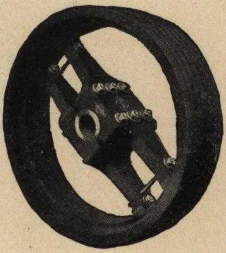
The rigid pillow block is furnished for shafts of all diameters from 15-16 in. to 5 15-16 in., with either the standard, wick-oiling capillary-oiling or chain-oiling bearing. A well designed line of patterns.

Rigid Compression Coupling



A low-priced desirable coupling, furnished complete with keys and bolts, made for shafts of all diameters from 1 3-16 in. to 4 7-16 in.

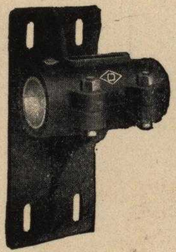
Wood Split Pulley



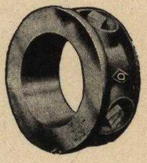
All-wood split pulleys are of double belt capacity, perfectly balanced; and furnished with interchangeable bushings. They are made from 3 to 120 inches in diameter and from 3 to 24 inches face.

Rigid Post Box

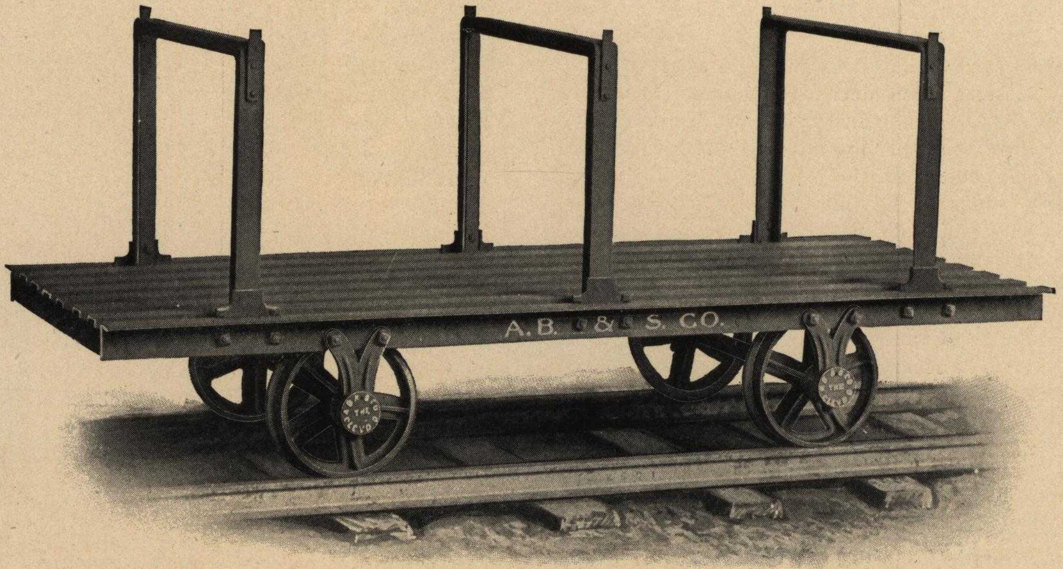
The post boxes are made for all shafts of all diameters from 1 7-16 in to 4 15-16 in., with either standard, wick-oiling, capillary-oiling or chain-oiling bearings. New patterns, well designed and fitted.



Solid Safety Set Collar



Safe and strong, quickly adjusted with a common wrench; neatly polished. Furnished for shafts from 15-16 in. to 4 15-16 in., either solid or split.



No. 126 Dryer Car

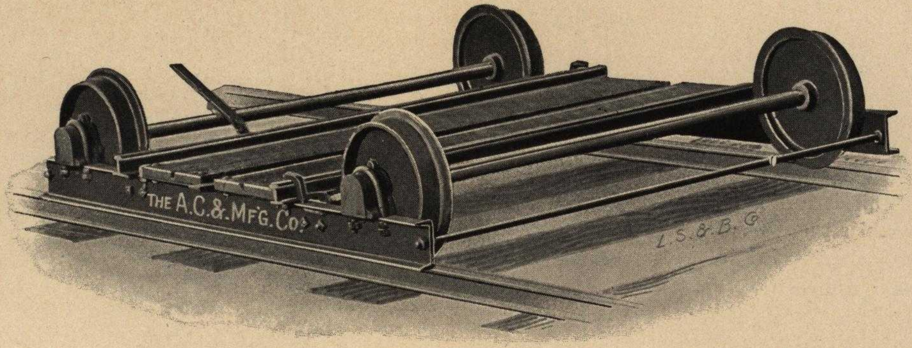
No. 126 Dryer Car

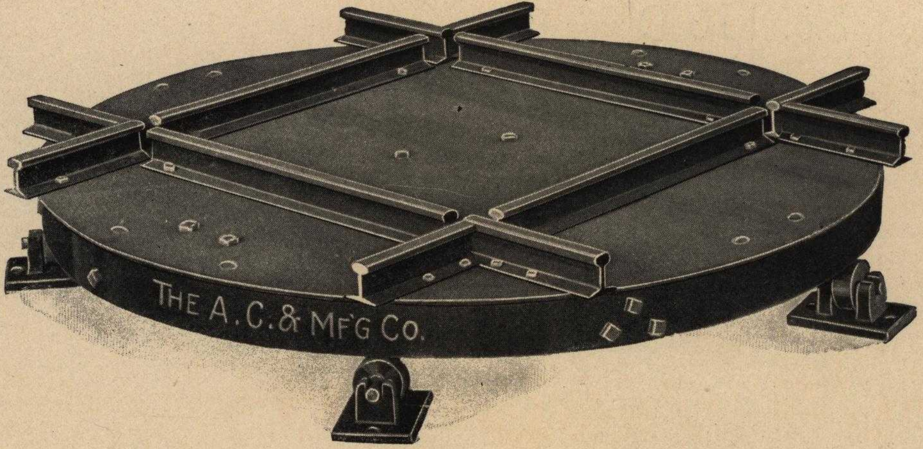
THIS car is furnished in five forms, viz. (1) without either the steel lower deck or the supports for the upper deck, (2) without the supports for the upper deck but including the steel lower deck, (3) without the steel lower deck, but with the supports for the upper deck, (4) with supports for upper deck and the steel lower deck as shown in cut, (5) as shown in cut with the addition of a steel upper deck. It is furnished with first-class roller bearings, having high carbon steel rolls; and the supports for upper deck, if used, are attached with malleable iron brackets. The upper and lower decks are made of channel steel.

Weight: Body of car, 200 lbs.; lower deck, 90 lbs.; upright supports, per set, 50 lbs.; upper deck, 100 lbs. Length over all, 6 ft. 3 in. Height, top of rail to top of lower deck, 13 in.; top of rail to top of supports for upper deck, 34 in. Width over all, 35 in. Gauge, 24 in. Capacity, 500 to 600 green brick.

No. 142 Transfer Car

STEEL construction. Great strength and light weight combined. Heavy wrought iron diagonal braces. Weight, 500 lbs. Distance to top of rails, 6 in. Gauge transfer car rails, 48½ in. Gauge on transfer, 24 in Length of rails on car, 5 ft.


THE A.C.&.MF'G.Co.
L.S.&B.G.

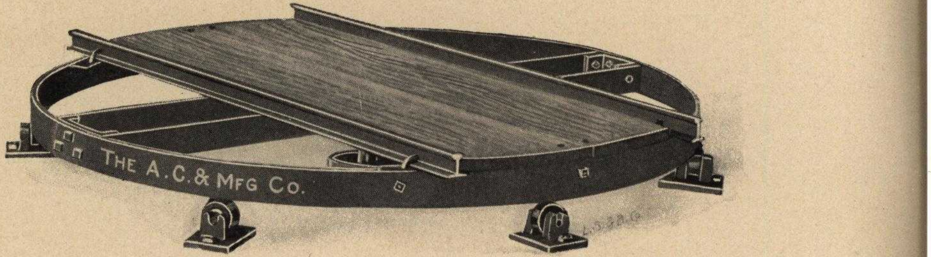

THE A. C. & MFG CO.

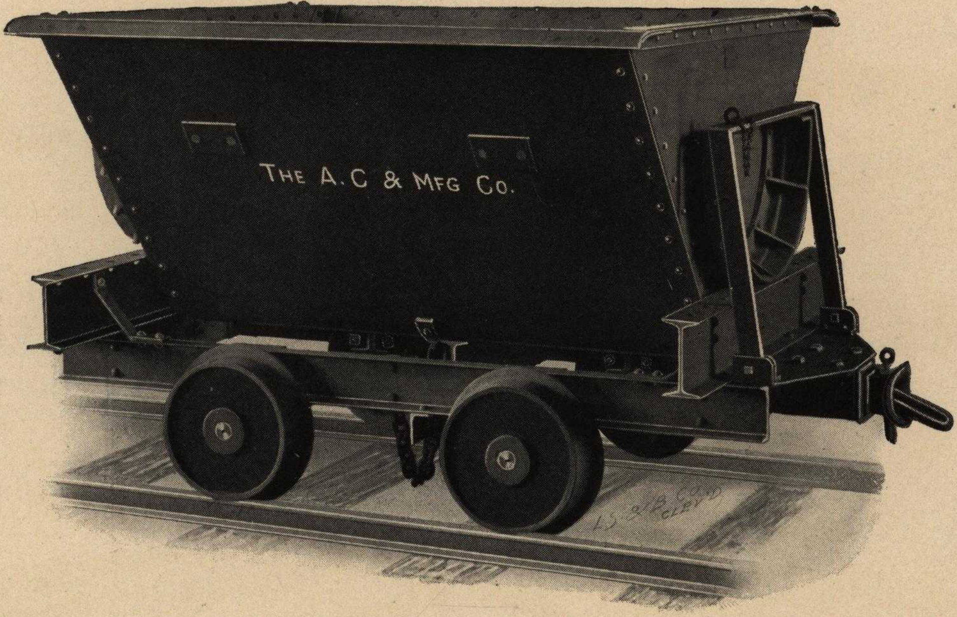
No. 146A Right Angle Track Turntable

The rigid bracing of this turntable insures against breaking or bending. It runs upon turned rolls, and is a first-class table in every respect. Weight 590 lbs.

No. 146 Turntable

This is a low priced wrought turntable of universal strength. Diameter of ring, 5 feet. Gauge, 24 inches. Weight, 330 pounds.


THE A. C. & MFG CO.

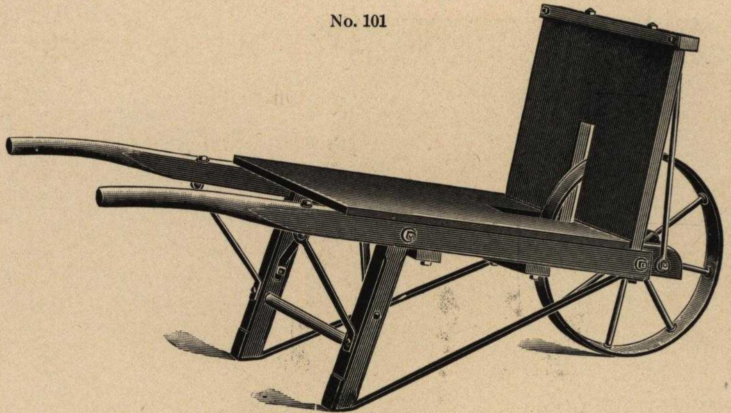

THE A.C & MFG CO.

No. 217 Either Side Rocker Dump Car

Frame: Channel steel.
Wheels: Chilled, 14 in. diameter.
Boxes: Bronze, self-oiling.
Draw Head: Malleable iron, with spring.
Length of Body: 5 ft.

Height: Top of rail to top of car, 3 ft. 10 in.
Width of Body: 5 ft.
Gauge: 36 in.
Capacity: 1½ cubic yds.
Weight: 1,250 pounds.

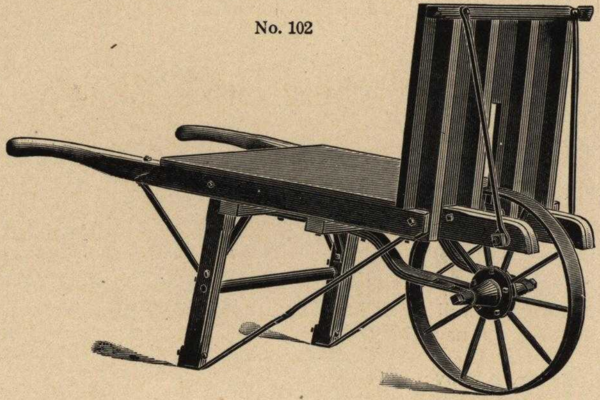
No. 101



No. 101 Brick Barrow

BUILT in a substantial manner, from the best material. Handles, 52 inches long; leg, 17 inches high. Bottom, 24 inches wide, 29 inches long. Dash, 24 inches wide, 19 inches high. Steel wheel, 19 inches diameter. Tire, 1¾ x ⅜ inches. Long iron leg braces, 1¾ x ⅜ inches, firmly bolted on, extend under ends of legs and fold up on front edge, serving as a shoe and adding much to the durability of the barrow. Weight, 70 pounds.

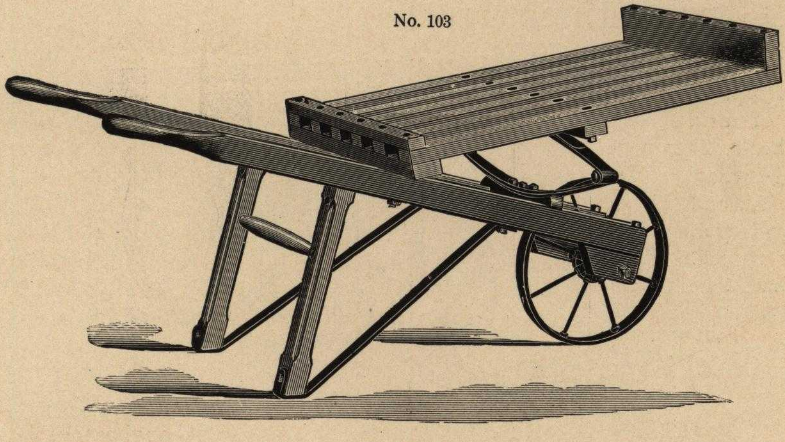
No. 102



No. 102 Spring Brick Barrow

THIS barrow is similar to the No. 101, being the same size, except that the legs are longer. The wheel is attached to three-leaved open springs, as shown in cut. Patent steel wheel, 19 inches diameter. Tire, 1¾ x ⅜ inches. A first-class barrow in every respect, well made, strong and durable. Weight, 75 pounds.

No. 103



No. 103 Spring Truck

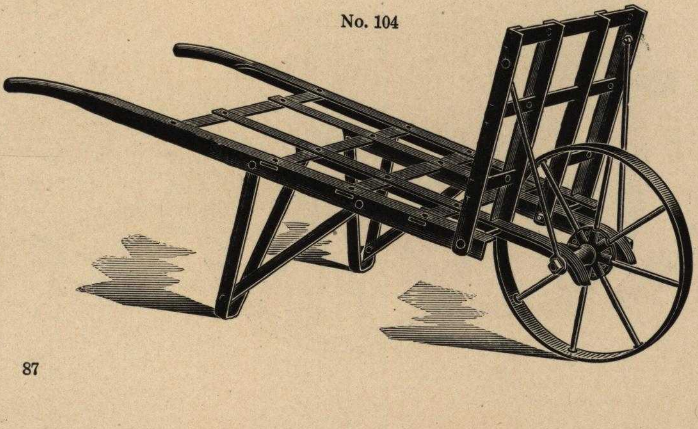
Off-Bearing

A STRONG, well-braced truck, made from the best seasoned timber. Platform or rack, 24 inches wide, 40 inches long. Strong two-leaved spring, 1½ x ¼ inches, 28 inches long. Patent wheel, 16½ inches in diameter. Tire, 1⅜ x ⅜ inches. Is preferred by many on account of the barrow shape of the handles. Weight, 74 pounds.

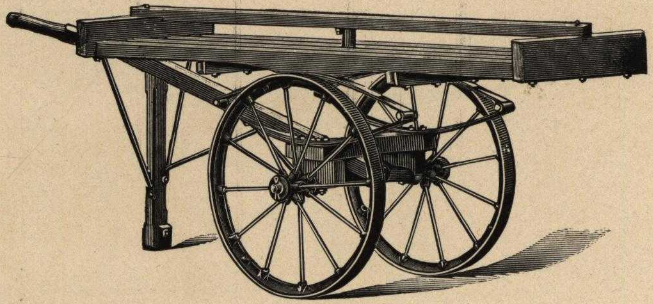
No. 104 Steel Brick Barrow

A STRICTLY high-grade barrow, not affected by the weather. Handles of steel angles, 1¾ x ¼, 52 inches long. Wheel arms, bottom slats and dash, all of steel angles, 1½ x ¼ inches. Bottom, 23 inches wide at handhold, 20 inches wide at dash, 32 inches long. Dash, 20 inches wide, 18 inches high. Patent steel wheel, 19 inches diameter. Tire, 1¾ x ⅜. Weight, 92 pounds.

No. 104

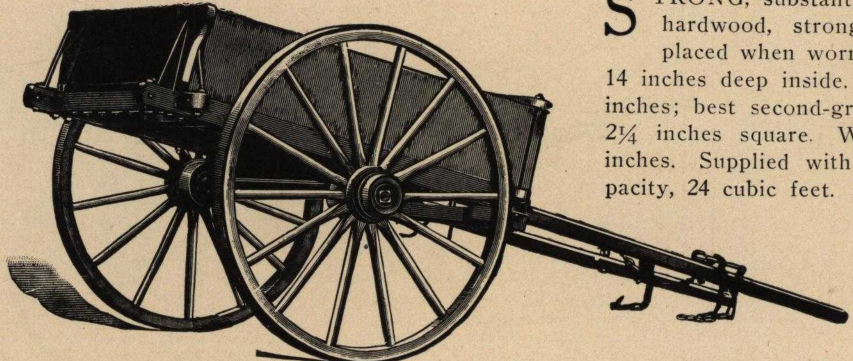


No. 105 Spring Brick Truck

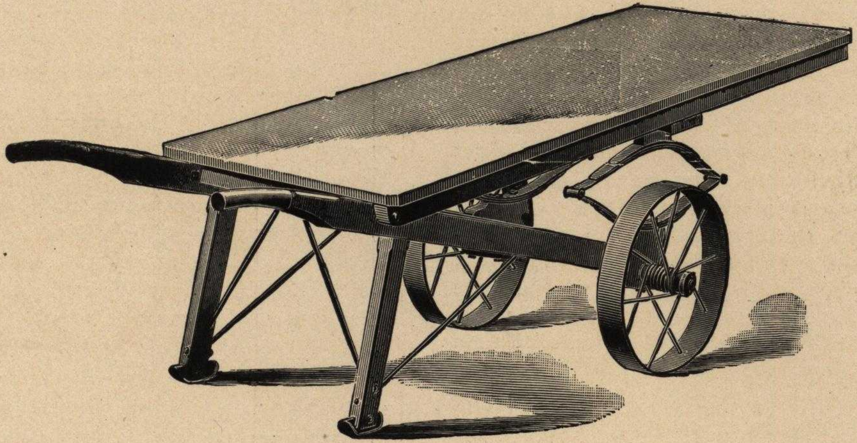


PLATFORM, 18 x 63 inches. Slats, 1½ x ½ inches. Height of platform at leg, 25 inches; at front, 27 inches. Handle extends 25 inches in front of rack. Length over all, 90 inches. Staggered spoke wheels, 24 inches diameter, with extra wrought tire, 1¾ x ⅛ inches. Steel axle, 1⅛ inches square, with sand collar inside, and sand cap outside of wheels. Two heavy two-leaved springs, 28 inches long. Wheels bored and axles turned. All steel braces, 1½-inch round. Weight, 160 pounds.

No. 106 Dump Cart



STRONG, substantial and durable. Made throughout of best hardwood, strongly bolted and braced. Parts easily replaced when worn. Bed, 66 inches long, 44 inches wide, and 14 inches deep inside. Wheels, 54 inches diameter. Spokes, 2½ inches; best second-growth oak. Tire, 3 x ½ inches. Steel axle, 2¼ inches square. Wheels set standard wide track, 5 feet 2 inches. Supplied with chains and hooks, as shown in cut. Capacity, 24 cubic feet. Weight, 800 pounds.



No. 107 Spring Tile Truck

THIS truck is designed to carry tile from the machine to the drying sheds. It is supplied with a large platform, 28 x 72 inches, mounted upon double three-leaf elliptical springs, and has two wrought iron wheels. It is a very satisfactory truck for tile, as it is steady and not easily upset. Weight, 125 pounds.

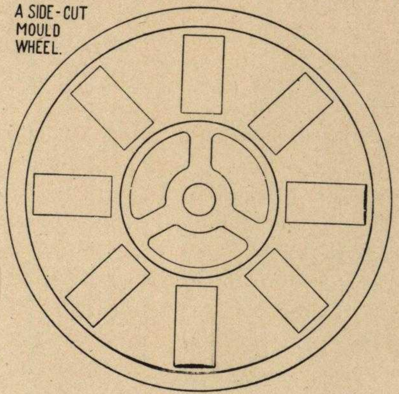
Brewer Mould Brick Machines

MOULD machines, or sword machines as they are sometimes called, form stiff-tempered clay into bricks without the use of any cutting machinery whatever; that is, they mould stiff-tempered clay into bricks which may be immediately haked from six to eight high. Like all other machines, they are not adapted to every clay; in fact, they give the best results in clays which other stiff-mud machines will not handle; particularly weak, short, sandy surface clays and those which shrink but little in drying and burning, and from such material they make a very strong brick. In a word, they make a stronger brick from poorer material than any other process in existence.

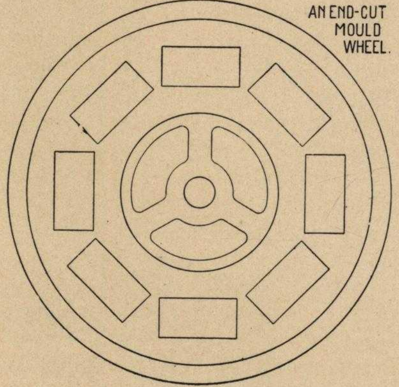
In the general design of a mould machine there are two principal parts, a pugging cylinder in which to prepare the clay and a mould wheel by which it is formed in shape. The former consists of a cast tub, or drum, upright in position, inside of which revolves a heavy shaft having secured to it several grinding knives, set at a slight angle, which pug the clay and force it downward; while upon the extreme lower end of this shaft is attached an auger, or turtle, by which the clay is pressed into the moulds. The mould wheel consists of a large circular table containing from eight to fourteen moulds, into which plungers, with stems extending downward through guides, are fitted. These plungers have an up and down motion given them by a track around and upon which the stems are carried by the mould wheel as it revolves, and as they approach the tub they are allowed to drop down, leaving a mould the size and shape of the brick to be made. As this mould passes under the tub it is filled with clay, the plunger elevated a little by the press wheel to square up the bottom of the brick, and the surplus clay removed by a cut-off knife, whereupon the plunger is raised by the track, leaving the finished brick upon the surface of the mould-wheel, ready to be taken off by hand or transferred to an off-bearing table by a mechanical device for that purpose. One mould follows another around under the tub, and all motions are continuous and rotary. The face of the plungers and the inside of the moulds are lubricated with oil so that the clay does not stick to them, and to prevent the brick from sticking together in the hake.

Mould Wheels

THE mould-wheel is the most important part of the machine, having heavy duty to perform under trying circumstances; consequently, great care is used in the selection of material and methods of manufacture. The body consists of a one-piece casting, just as hard as it can be made and permit proper machining, and the molds it contains are lined with crucible steel plates, hardened and ground. These plates are rabbeted together and secured in place by metal wedges, with all surrounding space wedged full of soft metal, making it impossible for them to work loose. The guides for the plunger stems are securely attached with cap screws which are locked in position to prevent backing out, although they can be removed if necessary. The plungers are made of the same material as the body of the wheel, accurately planed and fitted, having the ends of the stems chilled to withstand the wear caused by their travel upon the track.

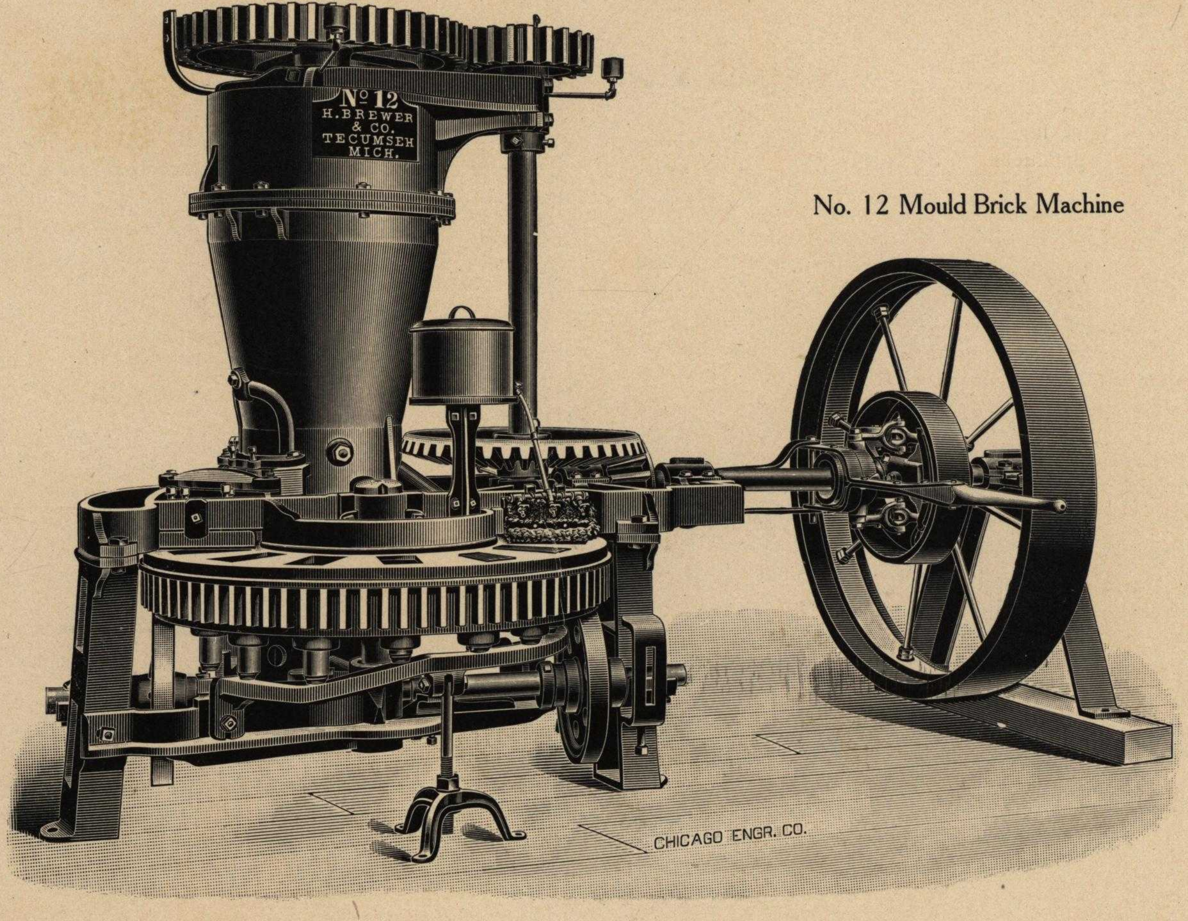


Two styles of mould-wheels are produced, side-cut and end-cut (difference shown by the sketches herewith), either of which may be used with the No. 8 machine, while the No. 12, the side-cut pattern, only is adaptable. No. 8 side-cut, No. 8 end-cut, and No. 12 side-cut wheels are carried in stock with the following sizes of moulds, viz., 9 x 4⅜, 8¾ x 4¼, 8⅝ x 4⅛, 8½ x 4 1-16; but other sizes can be made in about twenty days. Orders for mould-wheels should specify the style of wheel (side-cut or end-cut) and the size of mould desired.



Off-Bearing Tables

WITH No. 8 machines, having end-cut mould-wheels, a transfer device and off-bearing table can be furnished, by means of which the brick are delivered upon a belt. This apparatus consists of a metal disc, A (page 94), overlapping the mould wheel and revolving from the wheel toward the off-bearing belt, B, in such a manner that the bricks, having been guided upon it by the felt-covered rolls, X, are carried around and delivered to the belt by the large roll, C. These off-bearing tables are built in two styles, one to deliver on a line parallel with the driving shaft of the brick machine, and the other at right angles to that shaft. The former is illustrated by the engraving on page 94. Orders for machines with off-bearing tables should specify which style is desired.



No. 12 Mould Brick Machine

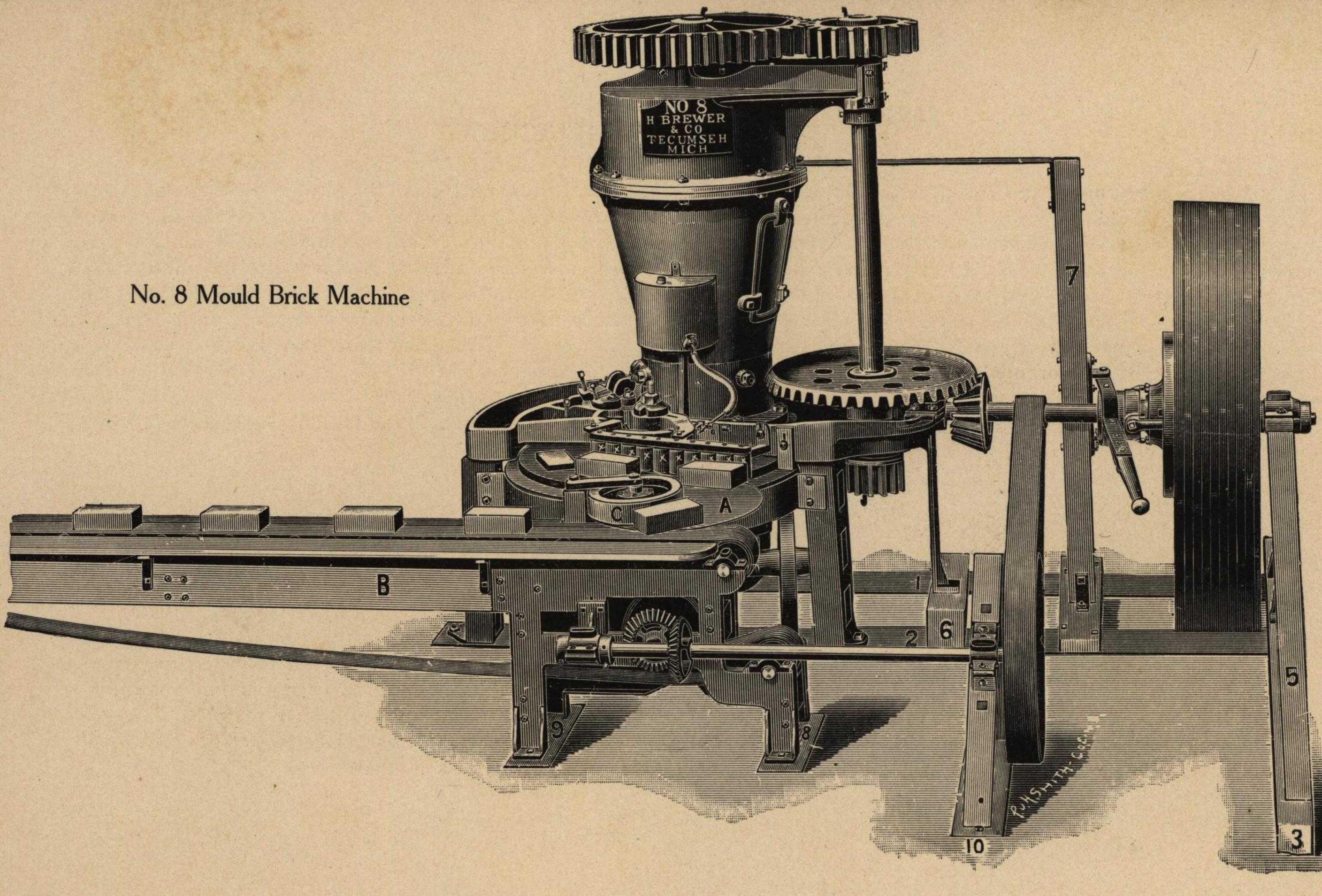
No. 12 Mould Brick Machine

THIS is the largest, strongest and heaviest mould machine produced, and has great advantages over anything of the kind previously placed upon the market. It is furnished with side-cut mould-wheel only, transfer device and off-bearing table not being adapted to it. In its construction only the best material is employed, and all parts are made as nearly proof against wear as is possible by the liberal use of special steel and chilled iron. The upthrust of the pugging shaft is taken by two split collars, which may be readily replaced at a very small cost when occasion requires, and the lower end of the pugging shaft which runs in the centering box is covered with a ring which takes the wear and prevents damage to the more expensive parts. It is the intention to have in stock at all times mould wheels for these machines with the following sizes of moulds, viz., 9 x 4⅜, 8¾ x 4¼, 8⅝ x 4⅛, and 8½ x 4 1-16; but other sizes can be built to order in about twenty days after receipt of specifications. The depth of the mould is adjustable, so that any thickness of brick up to 2¾ inches can be made as desired. This machine makes brick only, and is not adaptable to the manufacture of any other kind of ware.

Specifications

Weight: 10,000 pounds.
Height: Over all, 7 ft. 8 in.
  From bottom of leg to feeding point, 5 ft. 9 in.
Width: Over all, 5 ft.
Length: Over all, 10 ft. 6 in.
Shafts: Driving, 2⅞ in. diameter.
  Outside upright, 3½ in. diameter.
  Pugging, 3½ in. square.
Gears: 5 in. face, 2 in. pitch.
Journal Boxes: 6 to 10 in. long.
Driving Pulley: Friction clutch, 60 in. diameter, 10 in. face.
Direction of Revolution: Over from right to left as observer faces outer end of shaft.
Speed: 95 to 120 revolutions per minute.
Capacity: 3,500 to 5,000 bricks per hour.

No. 8 Mould Brick Machine



No. 8 Mould Brick Machine

THE engraving upon the opposite page illustrates the No. 8 Mould Brick Machine with end-cut mould-wheel, transfer device and off-bearing table, the latter being arranged to deliver on a line parallel with the driving shaft of the brick machine. Either side-cut or end-cut mould-wheels can be furnished for these machines, and the transfer device with off-bearing table to deliver as shown in cut or on a line at right angles to the driving shaft may be used with the end-cut wheel if desired, while with side-cut wheels these attachments are not furnished. The machine is well built and will stand hard work without expensive repairs, the wearing parts being subject to renewal at a small cost. Both side-cut and end-cut mould-wheels for these machines are carried in stock only with moulds of the following standard sizes, viz., 9 x 4⅜, 8¾ x 4¼, 8⅝ x 4⅛, and 8½ x 4 1-16; but other special sizes can be furnished to order. Mould machine orders should state whether mould wheel is to be side-cut or end-cut; the size of mould desired; whether or not off-bearing table is to be used, and, if so, whether it is to deliver at right angles to, or parallel with, the driving shaft.

Specifications

Weight: 8,400 pounds.
Height: Over all, 7 ft. 2 in.
From bottom of leg to feeding point, 5 ft. 6 in.
Width: Over all, 4 ft. 6 in.
Length: Over all, 10 ft.
Shafts: Driving, 2⅞ in. diameter.
Outside upright, 3½ in. diameter.
Pugging, 3½ in. square.
Gears: 5 in. face, 2 in. pitch.
Journal Boxes: 8 to 10 in. long.
Driving Pulley: Friction clutch, 60 in. diameter, 10 in. face.
Direction of Revolution: Over from right to left as observer faces outer end of driving shaft.
Speed: 80 to 130 revolutions per minute.
Capacity: 2,500 to 3,000 bricks per hour.
Weight Off-bearing Table: 925 pounds.
Length Off-bearing Table: 12 ft.

KENFIELD
PUBLISHING
COMPANY
CHICAGO